WPP 001/4 IHC 5,8 a 1 2. Edition

VA 6/100 H 1500 CR 19-3 CR 19-4

supersedes

8.73 IHC D 358

company engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches

and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

 $0,4 mm \pm 0,04$

Plunger lift of 1,0 mm related to outlet "A"

Charge-air press Difference in delivery kp/cm² 1. Settings 1000 5,0-5,8 1.1 Timing device travel 1000 5,8-6,3 kp/cm² 12 Supply pump pressure 1200 73,5-74,5 2,5 cm³/1000 strokes 1.3 Full-load delivery without charge-air pressure cm3/1000 strokes Full-load delivery with charge-air pressure 250 22,0-28,0 3,0 cm3/1000 strokes 1.4 Idle speed regulation 100 mind.84,0 cm3/1000 strokes 16,0-24,0 1620 cm3/1000 strokes 16 Full-load speed regulation

ecificatio	NS Checking value	s in brackets		
rev/min mm				1200 1400 -7,2) 6,9-7,6(6,6-7,9)
rev/min	200		2000	2500
kp/cm²	2,0-2,5(1,8-	2,7)	(5,6-6,5)	7,3-7,8(7,1-8,0)
rev/min	500			1500
cm ³ /10 s	55-100(40-11	0)		35-100(40-110)
Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
Full	1660-1730 (1640-1750) 1620 1510-1530 1400 1200 500	62,0-66,0	(73,0-75,0)	
300	1500	U		
Full	360-420 (340-440)	0	(21,0-29,0)	
Start	100	mind. 84.0		
	220-320			
	rev/min kp/cm² rev/min cm³/10 s Delivery lever Full Stop Full	Start 250-380(220-0,3-1,3(0-1, rev/min 200 2,0-2,5(1,8-rev/min 500 55-100(40-11	Start 250-380(220-350) 400 0,3-1,3(0-1,6) (4,7-6,1) 200 2,0-2,5(1,8-2,7) 1000	Start

Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 55 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV= 2,0 mm Dimension V= 24,6 mm	

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WPP 001/4 HAN 3,1 c 1 2. Edition

.

VA 4/100 H 1150 CR 55

2. Test Specifications

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

Checking values in brackets

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting

 $0,1 \text{ mm} \pm 0,02 (\pm 0,04)$

supersedes 5,75
company Hanomag
engine. D 142 K

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ²
1.1 Timing device travel	900	1,7-2,5	mm		
1.2 Supply pump pressure	900	4,8-5,3	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	55,0-56,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1.4 Idle speed regulation	300	7,0-13,0	cm ³ /1000 strokes		
1.5 Start	100	mind.75,0	cm ³ /1000 strokes		3,0
1.6 Full-load speed regulation	1200	21,0-29,0	cm ³ /1000 strokes		

2.1 Timing device	rev/min	600-730(570-	760)	900	950-1050
	mm	Start		(1,4-2,8)	2,5-3,2(2,2-3,5)
2.2 Supply pump	rev/min	200		900	1150
	kp/cm²	1,4-1,9(1,2-	2,1)	(4,6-5,5)	5,6-6,1(5,4-6,3)
Overflow delivery	rev/min	500			1150
	cm ³ /10 s	55-100(40-110	0)		55-100(40-110)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1200-1290 (1180-1310) 1200 1130 800 500		(20,0-30,5) (43,5-48,5) (54,5-56,5) (43,0-48,0)	
	Stop	1150	0		
idle stop	Full	330-410 (310-430) 300	0	(6,0-14,0)	·
	Start	100	mind.75,0		•
End stop		150-250			

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 4,5 mm Dimension V = 24,6 mm

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WPP 001/4 H A N 3,1 d 2 2. Edition

En

VA 4/100 H 1200 CR 58 0 460 304 163

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes 5.75 Hanomag

engine D 142 E 1/7

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-strake setting

 $0,1_{mm} \pm 0,02 (\pm 0,04)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

					e-setting see revers	
1.	. Settings	rev/min	Settings		Charge-air press. kp/cm ²	Difference in delivery cm ²
1.1	Timing device travel	800	1,3-2,1	mm .		1
1.2	Supply pump pressure	800	4,2-4,7	kp/cm ²		
1.3	Full-load delivery without charge-air pressure	800	52,0-53,0	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure	~~		cm ³ /1000 strokes		
1.4	Idle speed regulation	300	20,0-26,0	cm ³ /1000 strokes		.3,0
1,5	Start	100	mind.80,0	cm ³ /1000 strokes		
16	Full-load speed regulation	1250	33,0-41,0	cm ³ /1000 strokes		

2.1 Timing device	rev/min	580-700(550-730)	800	830-960
	mm	Start	(1,0-2,4)	2,5-3,2(2,2-3,5)
2.2 Supply pump	rev/min kp/cm²	200 1,1-1,6(0,3-1,8)	800 (4,0-4,9)	1200 5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm ³ /10 s	500 55-100(40-110)		1200 55-100(40-110)

	cm ³ /10 s	55-100(40-11	0)		55-100(40-110)
2 3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1290-1340 (1270-1360) 1250 1180 800 500	0 50,5-53,5 49,5-52,5	(32,0-42,0) (49,5-54,5) (51,5-53,5) (48,5-53,5)	
	Stop	1200	0		
Idle stop	Full	400-450 (380-470) 300	0	(19,0-27,0)	
End stop	Start	100 150-250	mind. 80,0)	

Angle to the stop-plate	Pre-setting dimensions	
Pump $ \alpha = 25 \pm 4^{\circ} $ $ \beta = 40 \pm 8^{\circ} $ $ \gamma = 30 - 8^{\circ} $ $ \delta = 60 + 8^{\circ} $	Pump Dimension IV 3,0 mm Dimension V 24,5 mm	

WPP 001/4 SAV 5,2 b 2 1. Edition

VA 6/110 H 1450 CR 169-2 0 460 316 021

> Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

Saviem company

798-40 engine

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers Test Intructions and Test Equipment **VDT-WPP 161/4 B**

Pre-setting see reverse side

Pre-stroke setting

 $0.4 \text{ mm} \pm 0.02 (\pm 0.04)$

1. Settings	rev/min	Settings	Charge-air press	Difference in delivery
1.1 Timing device travel	1000	4,9-5,9 _{mm}	kp/cm²	cm ^a
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm²	0	2.5
1.3 Full-load delivery without charge-air pressure	900	60,0-63,0 cm ³ /1000 strokes 80,0-81,0 cm ³ /1000 strokes	0 0,48	2,5
Full-load delivery with charge-air pressure 1.4 Idle speed regulation	300	12,0-18,0 cm ³ /1000 strokes	0	3,0
1.5 Start	100	mind.100,0 _{cm} 3/1000 strokes	0	
1.6 Full-load speed regulation	1550	36,0-44,0 cm ³ /1000 strokes	0,68	

-	ecificati			
2.1 Timing device	rev/min	450-550(420-580)	650 1000	1050-1200
	mm	Start	1,2-2,1(0,8-2,4)(4,6-6,	2) 6,1-6,8(5,8-7,1)
2 2 Supply pump	rev/min	200	1000	1450
	kp/cm²	1,4-1,9(1,2-2,1)	(5,3-6,2)	7,1-7,6(6,9-7,8)
Overflow delivery	rev/min	500		1450
	cm ³ /10 s	55-100(40-110)		55-100(40-110)

cm3/1000 strokes

į	Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1650-1710 (1630-1730)	0		0,68	
			1550		(35,0-45,0)	0,68
			1480-1520 1450	Start 76,5-79,5	(75,5-80,5)	0,68
			900	70,5-75,5	(79,5-81,5)	0,48
			750		(73,0-75,0)	0,35
			500	60,0-63,0	(59,0-64,0)	0
		Stop		0		

	Stop	-	0	
Idle stop	Full	370-420 (350-440) 300	0 (11,0-19,0)	
End stop	Start	190 110-220	mind. 100,0	

Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 50 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV= 5,0 mm Dimension V=24,6 mm	

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WPP 001/4 SAV 5,2 c

2. Edition

VA 6/110 H 1450 CR 169-3 O 460 316 025 supersedes 5.75 Saviem 798

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

Festoil-ISO 4113

 $0,4 \text{ mm} \pm 0,02 (\pm 0,04)$

2. Test Specifications Checking values in brackets

				6.26mild zee Level2	- 3100
1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	1000	4,9-5,9	mm	0	
1 2 Supply pump pressure	1000	5,5-6,0	kp/cm²	C	
1.3 Full-load delivery without	500	60,0-63,0	cm ³ /1000 strokes	0	2,5
charge-air pressure Full-load delivery with charge-air	1250	85,5-86,5	cm ³ /1000 strokes	0,48	
pressure 1.4 Idle speed regulation	300	12,0-18,0	cm ³ /1000 strokes	0	3,0
1.5 Start	100	mind.100,0	cm ³ /1000 strokes	0	3,0
1.6 Full-load speed regulation	1550	36,0-44,0	cm ³ /1000 strokes	0,68	

2.1 Timing device	rev/min mm	450-550(420 Start	-580) 1,1-2,	650 1(0,8-2,4)(4,	1000 ,6-6,2) 6,	1050-1200 1-6,8(5,8-7,1)
2.2 Supply pump	rev/min kp/cm ⁻	200 1,4-1,9(1,2-	2,1)	(5,3-	1000 6,2) 7,1-	1450 7,6(6,9-7,8)
Overflow delivery	rev/min cm³/10 s	500 55-100(40-11	0)			1450 55-100(40-110)
2.3 Fuel deliveries						
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pres	sure kp/cm²
End stop	Full	1650-1680 (1630-1700) 1500 1480-1500 1450 1250 1000 500	max. 7,0 Start 81,0-84,0 max. 84,0	(35,0-45,0) (80,0-85,0) (85,0-87,0) (60,0-64,0)	0,68 0,68 0,60 0,42 0	
	Stop	1450	0			
Idle stop	Full	370-420 (350-440) 300	0	(11,0-19,0)	r	
End stop	Start	100 120-220	mind. 100,	0 .		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 50 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 2,5 mm = 24,6 mm

WPP 001/4 SAV 5,2 d

2. Edition

VA 6/110 H 1450 CR 169-4 0 460 316 035

supersedes 12.78 Saviem company 798 Marine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B

 $0.4 \text{ mm} \pm 0.02(\pm 0.04)$

Pre-setting see reverse side

Pre-stroke setting

Charge-air press kp/cm² Settings Difference in delivery 1. Settings rev/min 1000 4,9-5,9 1.1 Timing device travel 1000 5,5-6,0 0 kp/cm² 12 Supply pump pressure 500 62,5-63,5 cm¹/1000 strokes 0 2.5 1.3 Full-load delivery without charge-air pressure 1100 103,5-104,5 cm³/1000 strokes 0,73 Full-load delivery with charge-air pressure 300 12,0-18,0 cm¹/1000 strokes 0 3.0 14 Idle speed regulation mind. 100,0 cm³/1000 strokes 100 76,0-84,0 cm³/1000 strokes 1550 0,73 1.6 Full-load speed regulation

2. Test Sp	ecificatio	NS Checking value			
2.1 Timing device	rev/min	450-550(420-	580) 650	1000	1050-1200
	mm	Start	1,2-2,1(),8-2,4)(4,6-	6,2) 6,1-6,8(5,8-7,1)
2 2 Supply pump	rev/min	200		1000	1450
	kp/cm²	1,4-1,9(1,2-	2,1)	(5,3-6,2)	7,1-7,6(6,9-7,8)
Overflow delivery	rev/min	500	• 1		1450
	cm³/10 s	55-100(40-11	0)		55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1730 1550	7,0	(75,0-85,0)	0,73 0,73
·		1450	99,5-102,5	(98.5-103.5)	0,73
		1100	64 5 67 5	(103,0-105,0 (63,5-68,5)	0,73
		1100 500	80.5-84.5	(79,5-85,5)	0,3
		500		(62,0-64,0)	0
	Stop	1450	0		
Idie stop	Full	370-420	0		
inie amh		(350-440)	U		
		300		(11,0-19,0)	
	Start	100	mind. 100,0		·
End stop		120-220		•	

A11

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 50 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV= 2,6 mm Dimension V = 24,6 mm

WPP 001/4 PEU 2.1 e 2. Edition

VA 4(90 H 2250 CR 170 0 460 394 012

supersedes

11.73

company

Peugeot XDP 4/90

engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches**

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-stroke setting

2. Test Specifications

 \pm 0,02(\pm 0,04)

Pre-setting see reverse side 1. Settings rev/min Settings Charge-air press Difference in delivery kp/cm 2000 1 1 Timing device travel 5,8-6,2 2000 5,6-6,1 1 2 Supply pump pressure kp/cm² 1.3 Full-load delivery without 1400 37,5-38,5 cm³/1000 strokes 1,5 charge-air pressure Full-load delivery with charge-air cm³/1000 strokes 330 1.4 Idle speed regulation 10,0-14,0 cm³/1000 strokes 3,0 100 mind.70,0 cm¹/1000 strokes 2350 12,0-18,0 1.6 Full-load speed regulation cm 1/1000 strokes

2. Test Sp	ecificatio	NS Checking value	es in brackets		
2.1 Timing device	rev/min mm	Start 1000	1600	200 3,4-4,8)(5,	0 2200-2400 3-6,4)6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min kp/cm ²	200 1,0-1,5(0,8		200 (5,4-6	
Overflow delivery	rev/min cm ³ /10 s	500 55-100(40-1	10)	•	2250 55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	2450 2350 2200 1400 850 500	max. 9,0 32,75-35,25 30,25-32,75 30,25-32,75	(37,0-39,0) (29,25-33,75)	
	Stop	2250	0		
idle stop	Full	400-460 (380-480) 330	0 .	(10,0-14,0)	
End stop	Start	100 150-250	mind. 70,0		·

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 30 \pm 4^{\circ}$ $\beta = \pm 8^{\circ}$ $\gamma = 18 + 2^{\circ}$ $\delta = -6^{\circ}$	Pump Dimension IV = 2,0 mm Dimension V = 25,0 mm

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WPP 001/4 SAV 5,2b

3. Edition

VA 6/110H 1400 CR 169 0 460 316 015 supersedes 10.74

company Saviem 798-11

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment VDT-WPP 161/4 B

VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting

0,4 mm $\pm 0,02$ ($\pm 0,04$)

2. Test Specifications Checking values in brackets

1.	Settings	rev/min	Settings		Charge-air press kp/cm ⁻	Difference in delivery cm ³
11	Timing device travel	1000	4,9-5,9	mm	0	
1.2	Supply pump pressure	1000	5,5-6,0	kp/cm²	0	
13	Full-load delivery without charge-air pressure	500	60,0-63,0	cm³/1000 strokes	0	2,5
	Full-load delivery with charge-air pressure	900	80,0-81,0	cm 1/1000 strokes	0,48	
14	Idle speed regulation	300	12,0-18,0	cm ³ /1000 strokes	0	3,0
15	Start	100	mind.100,0	cm ³ /1000 strokes	0	Andrews and the second
1.6	Full-load speed regulation	1500	36,0-44,0	cm³/1000 strokes	0,68	

2.1 Timing device 2.2 Supply pump	rev/min mm rev/min kp/cm²	450-550(420- Start 200 1,4-1,9(1,2-	1,1-2,1(0,8-2,4) (4,6) 000	1050-1200 5-6,2) 6,1-6,8(5,8-7,1) 1400 7,1-7,7(6,9-7,8)
Overflow delivery	rev/min cm ³ /10 s	500 55-100(40-11	0)		1400 55-100(40-110)
23 Fuel deliveries					
Speed control lever	Delivery fever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1600-1650 (1580-1670) 1500 1420-1480 1400 900 750 500	0 Start 76,0-79,0 80,0-81,0 60,0-63,0	(35,0-45,0) (75,0-80,0) (79,5-81,5) (73,0-75,0) (59,0-64,0)	0,68 0,68 0,48 0,35 0
Idle stop	Full	070 460			
Tero diap	Start	370-420 (350-440) 300	0 mind.100,0	(11,0-19,0)	
End stop	Start	110-220		•	·

Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 + 4^{\circ}$ $\beta = 50 + 8^{\circ}$ $\gamma = 30 + 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 5,0 mm = 24,6 mm	

A 16

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WPP 001/4 MAN 3,3a

2. Edition

En

VA 6/100 H 1500 CR 181 0 460 306 196 supersedesi 2.74
company MAN
engine D 0216 MXUL

Pre-stroke setting

 $0.5 \, \text{mm} \pm 0.02 \, (\pm 0.04)$

2. Test Specifications Chacking values in brackets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

1.	Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ²
1.1	Timing device travel	800	2,8-3,8 mm		
1.2	Supply pump pressure	800	4,6-5,1 kp/cm ²		
1.3	Full-load delivery without charge-air pressure	900	57,5-58,5 cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure		cm ³ /1000 strokes		
1.4	Idle speed regulation	300	12,0-18,0 cm ³ /1000 strokes		3,0
1.5	Start	100	mind. 80, 0 cm ³ /1000 strokes		
1.6	Full-load speed regulation	1600	26, 0-34, 0 cm ³ /1000 strokes		

2.1 Timing device	rev/min	Start 400-520(370-	-550) 600	800 1	200 1310-1440
		0,9-1,9(0,6-	2,2) (2,5-4	,1) 5,6-6,6(5	5,3-6,9) 6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	200		800	1500
	kp/cm ²	1,6-2,1(1,4-	-2,3)	(4,4-5,3)	7,2-7,7(7,0-7,9)
Overflow delivery	rev/min	500			1500
	cm ³ /10 s	55-100(40-1	110)		55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1630-1730 (1610-1750)	0		
	·	1600		(25,0-35,0)	
		1500-1540	Start		
		1480	58,5-61,5	(57, 5-62, 5)	
		900		(57,0-59,0)	
		500	47,5-52,5	(46,5-53,5)	
		4500			
	Stop	1500	0		
Idle stop	Fulf	400-460	0		
		(380-480)			
		300		(11,0-19,0)	
	Start	100	mind. 80,0		
End stop		110-210			

Angle to the stop-plate	Pre-setting dimensions			
Pump $a = 25 \pm 4^{\circ}$ $\beta = 55 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension 4,0 mm Dimension 24,6 mm			

WPP 001/4 IHC 5,8c 1

1. Edition

VA 6/110 H 1100 BR 47-1 0 460 316 007

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes

company engine

D 358 TC

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

IHC

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

9,5 mm

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	700	6,0-7,0	mm		
1.2 Supply pump pressure	700	5,3-5,8	kp/cm ²		
1.3 Full-load delivery without	900	67,5-70,5	cm ³ /1000 strokés	0 bar	2,5
charge-air pressure Full-load delivery with charge-air	900	77,0-78,0	cm ³ /1000 strokes	0,5 bar	
pressure 1.4 Idle speed regulation	300	12,0-18,0	cm ³ /1000 strokes		3,0
1.5 Start	100	mind.100	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1200	31,0-39,0	cm ³ /1000 strokes	0,5 bar	

2. Test Spe	ecificatio				
2.1 Timing device	rev/min	300-450 (270-480)		700	930-970
	mm	Start		(5,7-7,3)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100		700	1100
	kp/cm²	1,5-2,0(1,3	-2,2)		6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500			1100
	cm ³ /10 s	55-125(40-1	40)		55-125(40-140)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1230-1280 (1210-1300)	0		0,5 bar
•		1200		(30,0-40,0)	0,5 bar
		1100		(75,5-80,5)	0,5 bar
	1	900	60 5 74 5	(76,5-78,5)	0,5 bar
		700 400	54 0-57 0	(68,5-72,5) (53,0-58,0)	0,4.bar 0,1 bar
		400	34,0-37,0	(33,0,30,0)	o, r bar
	Stop	1100	0		
Idle stop	Full	360-420 (340-440)	0	(11,0-19,0)	
End stop	Start	100 150 500	mind. 100 mind. 100 max. 45,0		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 50 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 3,5 mm Dimension V = - mm

LDA Start of timing advance 60 - 70 mmHg End of timing advance 350





WPP 001/4 FIA 2,3 a 5

1. Edition

VA 4/110 H 1100 BL 136-1 0 460 314 007

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

En

supersedes

Fiat company 854.10

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

0.5 mm

2. Test Specifications

Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel	800	6,8-7,8	mm		
12	Supply pump pressure	800	4,8-5,3	kp/cm ²		
	Full-load delivery without charge-air pressure	800	60,0-61,0	cm ³ /1000 strokes	ļ	2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1.4	idle speed regulation	340	17,0-23,0	cm ³ /1000 strokes		3,0
1.5	Start	100	mind.130	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1170	42,0-48,0	cm ³ /1000 strokes		

Checking values in brackets

2.1 Timing device	rev/min mm	350-500(320- Start	·530) (6,	800 5-8,1)	1000-1150 11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min kp/cm²	100 0,8-1,3(0,6-	1,5 (4	800 ,6-5,5)	1100 6,5-7,0(6,3-7,2)
Overflow delivery	rev/min cm ³ /10 s	500 mind. 25	5		1000 55-125(40-140)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full .	1210-1260 1170 1100 800 500	0 57,0-60,0 58,0-61,0	(41,0-49,0) (56,0-61,0) (59,5-61,5) (57,0-62,0)	
	Stop	1100	0	٠	
ldie stop	Full	380-430 (360-450) 340	0	(16,0-24,0)	
End stop	Start	100 130-230	mind. 130		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 35 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 0,5 mm Dimension V = - mm

WPP 001/4 IHC 5,1 ; 2

1. Edition

VA 6/100 H 1150 BR 79 0 460 306 154

2. Test Specifications

supersedes

IHC company D 310

engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-stroke setting 0,3 mm Plunger lift of 1,0 mm related to outlet "A"

Checking values in brackets

Pre-setting see reverse side

r to setting s					A see least se sine	
1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³	
1.1 Timing device travel	800	4,8-5,8	mm			
1 2 Supply pump pressure	800	1,2-1,7	kp/cm²			
1.3 Full-load delivery without charge-air pressure	800	58,5-59,5	cm³/1000 strokes		2,5	
Full-load delivery with charge-air			cm ³ /1000 strokes			
pressure 1.4 Idle speed regulation	300	7,0-13,0	cm ³ /1000 strakes		3,0	
1.5 Start 196 bar	100	mind.90,0	cm ³ /1000 strakes			
1 6 Full-load speed regulation	1250	21,0-29,0	cm ³ /1000 strokes	-		

2.1 Timing device	rev/min	400-550 (370 Start		800 1,5-6,1)	9,7	950-1100 '-10,4(9,4-10,7)
2.2 Supply pump	rev/min kp/cm²	100	2.2)	800 (1,0-1,9)	6.5	1150 6-7,0(6,3-7,2)
Overflow delivery	rev/min cm ³ /10 s	500 mind. 25	-,-,	(1,0 1,5)	-	1150 125(40-125)
23 Fuel deliveries						
Speed control lever	Delivery lever	rev/min	cm³/1000 strokes			Charge-air pressure kp/cm ²
End stop	Full	1270-1340 (1250-1360) 1250 1160-1190 1130 800 500	Start 56,0-59,0 52,5-55,	(58,0-60),0)),0)	
	Stop	1150	0			
idle stop	Full	340-390 (320-410) 300	0	(6,0-14,	,0)	
End stop	Start	100 500 mind. 150	mind.90,0 max. 35,0			·

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 7,0 mm Dimension V = - mm

0,5 mm

WPP 001/4 IHC 5,8 v

1. Edition

VA 4/100 H 1250 BR 77 0 460 304 164

Pre-stroke setting

supersedes

company

IHC D 239

engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Festoil-ISO 4113

Plunger lift of 1,0 mm related to outlet "A" Pre-setting see reverse side Difference in delivery Charge-air press 1. Settings kp/cm 800 8,8-9,8 mm 1.1 Timing device travel 800 4,9-5,4 kp/cm² 12 Supply pump pressure 800 67,5-68,5 cm³/1000 strokes 13 Full-load delivery without charge-air pressure cm3/1000 strokes Full-load delivery with charge-air 350 12,0-18,0 cm3/1000 strokes 1.4 Idle speed regulation 100 mind.90.0 cm³/1000 strokes 15 Start 330 28,5-36,5 cm 1/1000 strokes 16 Full-load speed regulation

cification	1S Checking value	s in brackets				
nm		380) (8,5-1	800 0,1)	13,7-	1050-1200 14,4(13,4-1	4,7)
rev/min	:00		800		1250	
kp/cm²	1,3-1,8(1,1-	2,0) (4,	7-5,6)	6,5-7,0(6,3	-7,2)
rev/min cm ³ /10 s	500 mind. 25				1250 55-125(40-1	40)
Delivery lever	rev/min	cm ³ /1000 strokes			Charge-air pressur	e kp/cm²
Full	1350-1400 (1330-1420) 1330 1200 800 500	63,0-66,0 (6	2,0-6 7,0-6	7,0) 9,0)		
Stop	1250	0				
Full	390-440 (370-460) 350	0 (1	1,0-1	9,0)		
Start	100 500 mind. 180	mind. 90,0 35,0-60,0 (3	34,0-6	1 , 0)		
	rev/min rev/min kp/cm² rev/min cm³/10 s Delivery lever Full Stop Full	200-350(170-5 100 1,3-1,8(1,1-2 100 1,3-1,8(1,1-2 100 1,3-1,8(1,1-2 100	200-350(170-380) Start	Start 200-350(170-380) 800 Start (8,5-10,1) 100 800 1,3-1,8(1,1-2,0) (4,7-5,6) 1,3-1,8(1,1-2,0) 1,	200-350(170-380) 800	Start 200-350(170-380) 800 1050-1200 Start (8,5-10,1) 13,7-14,4(13,4-1 1.00

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = - mm Dimension V = - mm

WPP 001/4 IHC 3,9 d 3

1. Edition

VA 4/100 H 1150 BR 69-1

supersedes

IHC D 239

company

engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-stroke setting

estoil-ISO 4113

0,5 mm

Plunger lift of 1,0 mm related to outlet "A"

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
1 1 Timing device travel	700	6,8-7,8	mm		
1.2 Supply pump pressure	700	4,9-5,4	kp/cm²	,	
Full-load delivery without charge-air pressure	800	72,0-73,0	cm ³ /1000 strakes		2,5
Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1 4 Idle speed regulation	350	12,0-18,0	cm ⁴ /1000 strokes		3,0
(mech.)	100	mind.90,0	cm 1/1000 strokes		
1 6 Full-load speed regulation	1200	26,0-34,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value			
2.1 Timing device	rev/min mm	230-400 (20 Start	00-430) (700 (6,5-8,1)	920-1090 11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100		700	1150
	kp/cm²	1,3-1,8(1,1	-2,0) (4,7-5,6)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min cm ³ /10 s	500			1150
23 Fuel deliveries		mind. 25	•		55-125(40-140)
Speed control lever	Delivery lever	:ev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1230 1200 1120 800 500	max. 10,6 72,0-75,6 65,5-68,9	0 (25,0-35,0 (71,0-76,0 (71,5-73,5 (64,5-69,5	0)
	Stop	1150	0		
Idle stop	Full	390-450 (370-470) 350	0	(11,0-19,0))
End stop	Start	100 mind.180	mind. 90,0		·

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 3,0 mm Dimension V = - mm

46

WPP 001/4 IHC 3,9 d 2

1. Edition

VA 4/100 H 1100 BR €9 0 460 304 133 supersedes

company

IHC D 239

engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

0,5 mm

2. Test Specifications

Plunger lift of 1,0 mm related to outlet "A"

	• • •	The setting see tereste side			
1. Settings	rev/min	Settings		Charge-air press kp/cm ⁻	Difference in delivery cm ³
1.1 Timing device travel	700	6,5-7,5	mm		
1.2 Supply pump pressure	700	4,8-5,3	kp/cm ²		
1.3 Full-load delivery without charge-air pressure	800	69,0-70,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1 4 Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0
1.5 Start (mech.)	100	mind.90,0	cm³/1000 strokes		
1 6 Full-load speed regulation	1150	36,0-44,0	cm ³ /1000 strokes		
	1	1		I .	i

Checking values in brackets

2.1 Timing device	rev/min	230-400 (20	0-430)	700	1100
	mm	Start		(6,2-7,8)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100		700	1100
	kp/cm²	1,4-1,9(1,2	-2,1)	(4,6-5,5)	6,2-6,7(6,0-6,9)
Overflow delivery	rov/min	500		1000	
	cm ³ /10 s	mind. 25		55-125(40-14	0)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1180-1250 (1160-1270)	0		
		1150 1050	68.0-71.0	(35,0-45,0) (67,0-72,0)	
		800	00,0 71,0	(68,5-70,5) (61,0-66,0)	
		500	62,0-65,0	(61,0-66,0)	
	Stop	1100	0		
Idle stop	Full	390-450	0		
		(370-470) 350		(11,0-19,0)	
	Start	100			
End stop	Sidiff	500 mind.180	mind. 90,0 30,0-60,0	(29,0-61,0)	·

Testoil-ISO 411

3 x - 1

Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 3,0 mm Dimension V = - mm	

46

WPP 001/4 IHC 3,5d 1

1. Edition

VA 4/100 H 1250 BR 68-1 P 0 460 304 127 ..128

supersedes

company engine IHC D 206

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm ⁻	Difference in delivery cm ³
1 1 Timing device travel	800	8,8-9,8	mm		
1 2 Supply pump pressure	800	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	53,0 54,0	cm ³ /1000 strokes		2,5
Full-toad delivery with charge-air pressure			cm ³ /1000 strokes		
1 4 Idle speed regulation	350	12,0-18,0	cm 1/1000 strokes		3,0
15 Start (mech.) 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1300	31,0-39,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value	s in brackets		
2.1 Timing device	rev/min	200-350 (170	0-380)	800	1050-1200
	mm			(8,5-10,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100		800	1250
	kp/cm ²	1,3-1,8(1,1	-2,0)	(4,7-5,6)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min cm ³ /10 s	500 mind, 25	5	1000 5-125(40-140)	
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 stroke	95	Charge-air pressure kp/cm²
End stop	Fuli	1320-1370 (1300-1390) 1300 1200 800 500		(30,0-40,0) 5 (47,5-52,5) (52,5-54,5) 5 (42,5-47,5)	
•	Stop	1250	0		
ldle stop	Full	390-440 (370-460) 350	0	(11,0-19,0)	
End stop	Start	100 500 mind.180	mind. 90 max.30,0		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 0,5 mm Dimension V = - mm

WPP 001/4 IHC 3,5 d

2. Edition

VA 4/100 H 1250 BR 68

supersedes

6.70

company engine

IHC D 206

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers Test intructions and Test Equipment

VDT-WPP 161/4 B Pre-setting see reverse side

0,5 mm Pre-stroke setting Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings	Charge-air press kp/cm²	Difference in delivery cm ³
1.1	Timing device travel	800	8,8-9,8 mm		
1.2	Supply pump pressure	800	4,9-5,4 kp/cm ²		
1.3	Full-load delivery without charge-air pressure	800	57,0-58,0 cm ³ /1000 strokes	;	2,5
	Full-load delivery with charge-air pressure		cm ³ /1000 strokes		
14	Idle speed regulation	350	12,0-18,0 cm ³ /1000 strokes		3,0
1.5	Start (mech.) 196 bar	100	mind. 90,0 cm ³ /1000 strokes		
16	Full-load speed regulation	1300	38,0-46,0 cm ³ /1000 strokes		

2. Test Sp	ecificatio				
2.1 Timing device	rev/min	200-350(170		800	1050-1200
	mm	Start		(8,5-10,1)	13,7-14,4(13,4-14,7)
22 Supply pump	rev/min	100		800	1250
	kp/cm²	1,3-1,8(1,1	-2,0)	(4,7-5,6)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min cm³/10 s	500 mind. 25	55-1	1000 25(40-140)	
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm³/1000 strokes	10	Charge-air pressure kp/cm²
End stop	Full	1330-1380 (1310-1400) 1300 1200 800 500	(37 56,5-59,5 (55	.5-58.5)	
Idle stop	Full	390-440 (370-460) 350	0 (11	,0-19,0)	
End stop	Start	100 500 mind. 180	mind. 90,0 max. 30,0-50,	0	

Angle to the stop-plate	Pre-setting dimensions		
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 0,5 mm Dimension V = - mm		

46

WPP 001/4 IHC 3,9 c2

1. Edition

VA 4/100 H 1250 BR 67-1

supersedes

company

engine

IHC D 239

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

0,5 mm

Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
1.1	Timing device travel	800	8,8-9,8	mm		
1.2	Supply pump pressure	800	4,9-5,4	kp/cm²		
13	Full-load delivery without charge-air pressure	800	69,5-70,5	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
14	idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0
15	Start (mech.) 196 bar	100	mind.90,0	cm ³ /1000 strokes		
16	Full-load speed regulation	1300	44,0-52,0	cm ¹ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value	es in brackets		
2.1 Timing device rev/min		200-350(170-380)		300	1050-1200
	mm	Start		(8,5-10,1)	13,7-14,4(13,4-14,7)
22 Supply pump	rev/min	100		800	1250
	kp/cm²	1,3-1,8(1,1	-2,0)	(4,7-5,6)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500		1000	
	cm ³ /10 s	mind. 25		55-125(40-140)	
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	crn³/1000 stroke	s	Charge-air pressure kp/cm²
End stop	Full	1350-1400	0		

End stop	Full	1350-1400 (1330-1420) 1300 1200 800 500	0 (43,0-53,0) 65,5-68,5 (64,5-69,5) (69,0-71,0) 64,5-67,5 (63,5-68,5)	
	Stop	1250	0	
idle stop	Full	390-440 (370-460) 350	0 (11,0-19,0)	
End stop	Start	100 500 mind.180	mind. 90,0 35,0-65,0 (34,0-66,0)	

Angle to the stop-plate	Pre-setting dimension
Pump $\dot{\alpha} = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 0,5 mm = - mm

WPP 001/4 IHC 3,9 b 3. Edition

En

VA 4/100 H 1100 BR 12-6 P Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) 0 460 304 111

11.73 supersedes IHC company. D 239-WW 50 6 D

engine.

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers **Test Intructions and Test Equipment**

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

 $\pm 0.02 (\pm 0.04)$ 0,5 mm

1. Settings	rev/min	Settings		Charge-air press. kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	700	7,5-8,5	mm		
1.2 Supply pump pressure	700	4,5-5,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	900	68,0-69,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1.4 Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes	[3,0
1.5 Start	100	mind.85,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1150	41,0-49,0	cm ³ /1000 strokes		

2. lest Sp 2.1 Timing device	rev/min	115 Checking value 200-350 (170	s in brackets -380)	700	850-1000
•	mm	Start		(7,3-8,8)	11,7-12,5(11,4-12,8)
0.0 Cumply	rev/min	100		700	1100
2 2 Supply pump	kp/cm²	1,3-1,8(1,1	-2,0)	(4,3-5,2)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500			1100
	cm ³ /10 s	#D ###			55-125(40-140)
2.3 Fuel deliveries		 			
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1200-1300 (1180-1320) 1150 Maximal deli 1050 900 500	very 66,5-68,5	(40,0-50,0) (69,0-75,0) (65,5-69,5) (67,5-69,5) (62,5-67,5)	•
	Stop	1100	0		
Idle stop	Full	390-450 (370-470) 350	0	(11,0-19,0)	
End stop	Start	100 500 mind.150	mind. 85,0 30,0-60,0	(34,0-61,0)	

Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 5,0 mm Dimension V = - mm	

B14

WPP 001/4 IHC 3,9 b 3

1. Edition

VA 4/100 H 1050 BR 12-8

0 460 304 156

.. 157

P

supersedes

company IHC

engine D 206 100 B-Lader

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting

 $0.5 \text{ mm} \pm 0.02(\pm 0.04)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

				e-setting see revers	e 2106
1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	800	8,0-9,0	mm		
1.2 Supply pump pressure	800	5,7-6,2	kp/cm ²		
1.3 Full-load delivery without charge-air pressure	900	64,0-65,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1 4 Idle speed regulation	360	12,0-18,0	cm ³ /1000 strokes		3,0
1 5 Start	100	mind.90,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1100	31,0-39,0	cm ³ /1000 strokes		

Nozzle-and-holder assembly

1 688 901 020 (172 + 3 bar)

2. Test Sp	ecificatio	NS Checking value	s in brackets		
2.1 Timing device	rev/min	150-300(120	-330)	800	900-1020
	mm	Start		(7,7-9,3)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100		800	1050
	kp/cm²	1,5-2,0(1,3	-2,2)	(5,5-6,4)	6,6-7,1(6,4-7,3)
Overflow delivery	rev/min	500		1000	
	cm ³ /10 s	mind.25	5	5-125(40-140)	
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strakes		Charge-air pressure kp/cm²
End stop	Full	1140-1190 (1120-1210) 1100 1000 900 500	63,5-65,5	(30,0-40,0) (62,5-66,5) (63,5-65,5) (55,0-60,0)	
	Stop	1050	0		·
Idle stop	Full	400-450 (380-470)	0	(44 0 40 0)	
		360		(11,0-19,0)	
mad . A ==	Start	100 500	mind.90,0 35,0-57,0	(34,0-58,0)	
End stop		mind.160	<u> </u>		

Testoil-ISO 4113

B15

BOSCH

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 5,0 mm Dimension V = - mm

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WPP 001/4 IHC 5,8 a

3. Edition

VA 6/100 H 1500 BR 19-1 O 460 306 084

Test Specifications

Nozzle-and-holder assembly
 1 688 901 020 (172 + 3 bar)

supersedes 12.70 IHC XDD 358

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Rosch Fuel Injection Pump Test Be

Pre-stroke setting

 0.3_{mm} $\pm 0.02 (\pm 0.04)$

Bosch Fuel Injection Pump Test Benches and Testers
Test Infructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

estoil-ISO 4113

			Pr	e-setting see revers	e side
1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ²
1.1 Timing device travel	1000	8,5-9,5	mm		
1 2 Supply pump pressure	1000	5,2-5,7	kp/cm²		
1.3 Full-load delivery without	1200	76,0-77,0	cm ³ /1000 strokes		2,5
charge-air pressure Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 14 Idle speed regulation	250	22,0-28,0	cm ³ /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1600	31,0-39,0	cm ³ /1000 strokes	,	

Checking values in brackets

2. Test Spar 2.1 Timing device	rev/min	300-500(270-		1000	1250-1410
	rnm	Start		(8,2-9,8)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100		1000	1500
E.E. Guppiy pump	kp/cm²	1,0-1,5(0,8-	1,7)	(5,0-5,9)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500			1500
Overnow delivery	cm ³ /10 s	mind. 25			85-155(70-170)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strol	kes	Charge-air pressure kp/cm ²
End stop	Full .	1680-1780 (1660-1800) 1600 1400 1200 900 500	71,0-74,	(30,0-40,0) 0 (73,0-81,0) (75,5-77,5) 0 (70,0-75,0) 0 (61,0-67,0)	7
	Stop		0		
Idle stop	Full	350-410 (330-430) 250	0	(21,0-29,0)	
End stop	Start	100 180 500	mind.90, mind.90, max. 60,	0	

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 60 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump = 1,5 mm Dimension IV = - mm Dimension I = 7,0 mm Cimension II = 14,0 mm Dimension III = 34,8 mm

WPP 001/4 IHC 2,4a 5

1. Edition

VA 3/100 H 950 BR 9-2

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes IHC

company D 155 engine

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

0,3 Pre-stroke setting

Test Intructions and Test Equipment VDT-WPP 161/4 B

Dra-cation can reverse

Festoil-ISO 4113

			Pi	e-setting see revers	ie side
1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	500	7,1-8,1	mm		
1.2 Supply pump pressure	500	5,0-5,5	kp/cm ²		
1.3 Full-load delivery without charge-air pressure	700	58,5-59,5	cm ³ /1000 strokes		.2,5
Full-load delivery with charge-air pressure	,		cm ³ /1000 strokes		
1 4 idle speed regulation	400	15,0-21,0	cm ³ /1000 strokes	1	3,5
15 Start 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1000	36,0-44,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value	es in brackets			
2.1 Timing device	rev/min	120-270(100-		500		700-850
	mm	Start		(6,8-8,4)	12,	7-13,4(12,4-13,7)
2.2 Supply pump	rev/min	100		500	,	950
ser my permp	kp/cm²	2,2-2,7(2,0-	2,9)	(4,8-5,7)	7,	0-7,5(6,8-7,7)
Overflow delivery	rev/min	500	•			950
Overnow delivery	cm ³ /10 s	mind. 27			55	-125(40-135)
2.3 Fuel deliveries	•	<u> </u>				
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes			Charge-air pressure kp/cm ²
End stop	Full	1020-1070 (1000-1090) 1000 930 700 500		(35,0-45 (61,5-66 (58,0-60 (52,0-57	5,5) (,0)	
	Stop	950	0			
idle stop	Full	460-510 (440-530) 400 500	0 34,0-48,0	(14,0-22 (33,0-49	2,0) 9,0)	
End stop	Start	100 mind. 180	mind. 90,	0	-	

	1110 2,7 0 3	
Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 2,0 mm Dimension V = - mm	

WPP 001/4 IHC 2,4a 6

1. Edition

VA 3/100 H 1150 BR 9-3 1100 BR 9-4

 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes company IHC engine

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

2. Test Specifications Checking values in brackets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B Pre-setting see reverse side

Pre-stroke setting

0,3 mm

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel	700	8,8-9,6	mm		
1.2	Supply pump pressure	700	5,9-6,4	kp/cm ²		
1.3	Full-load delivery without charge-air pressure	800	63,0-64,0	cm ³ /1000 strokes		
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
14	Idle speed regulation	300	17,0-23,0	cm ³ /1000 strokes		
1.5	Start 196 bar	100	mind. 87,0	cm ³ /1000 strokes		
16	Full-load speed regulation	1150	36,0-44,0	cm ³ /1000 strokes		

2.1 Timing device	rev/min	200-350(170-	380)	700	880-1030	
	mm	Start	(8	,5-9,9)	12,7-13,4(12,4-13,7)	
2.2 Supply pump	rev/min kp/cm²	100	o o) /s	700	1150	
Overflow delivery	rev/min	500		700	7,3-7,8(7,1-8,0) 1150	
2.3 Fuel deliveries	10117103	<u> 55-125(40-13</u>	5) 55-	125(40-135) 55-125(40-135)	
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²	
End stop	Full	1180-1230 (1160-1250) 1150 1080 800 500	0 68,5-71,5 57,5-60,5	(35,0-45, (67,5-72, (62,5-64, (56,5-61,	0) 5) 5) 5)	
	Stop	1150	0			
Idle stop	Full	430-440 (410-420)	0			
End stop	Start	300 100 mind. 180	mind. 87,	(16,0-24, 0	0)	

Angle to the stop-plate	Pre-setting dimensions
Pump $a = 25 \pm 4^{\circ}$ $\beta = 45 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 6,0 mm Dimension V = - mm

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WPP 001/4 STE 2,4 a 1

1. Edition

VA 3/90 H 1200 CR 172-1 0 460 393 008

supersedes

company

engine

Steyr WD 308.41

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

0,3 mm

2. Test Specifications

 $\pm 0.02 (\pm 0.04)$

1.	Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
1.1	Timing device travel	800	1,4-2,2	mm		
1.2	Supply pump pressure	800	4,5-5,0	kp/cm²		
1.3	Full-load delivery without charge-air pressure	1180	60,5-61,5	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure	***		cm ³ /1000 strokes		
14	Idle speed regulation	300	9,5-15,5	cm 1/1000 strokes		3,0
1.5	Start	100	mind.70,0	cm ³ /1000 strokes		
16	Full-load speed regulation	1300	26,0-34,0	cm 1/1000 strokes		

Checking values in brackets

2.1 Timing device	rev/min	420-570(320	-600)	600 80	0 9	20-1170
	mm	Start	0,3-	1,3(0-1,6)(1,1	-2,5)2,4-3	,1(2,1-3,4)
22 Supply pump	rev/min	200		. 80	0	1200
	kp/cm²	1,6-2,1(1,3	-2,4)	(4,3-5	,2)5,9-6,4	(5,7-6,6)
Overflow delivery	rev/min	500			حد شور	1200
	cm ³ /10 s	55-100(40-1	10		55-	100(40-110)
23 Fuel deliveries						
Speed control lever	Delivery lever	rev/min	cm ³ /1000 stroke:	5	Charge-air pres	sure kp/cm'
End stop	Full	1360-1420 (1340-1440) 1300 .1240-1270 1180 800 500		(25,0-35,0) (60,0-62,0) 75(59,25-63,75 5 (59,5-64,5)		
	Stop	1200	0			
Idle stop	Full	400-450 (380-470) 300	0	(8,5-16,5)		
	Start	100	mind.70,	0		
End stop	Start	120-220				•
					1	

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 45 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 4,0 mm Dimension V = 24,6 mm

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WPP 001/4 IHC 2,9 a

2. Edition

VA 3/100 H 1050 BR 11

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes 6.66

company IHC D 179

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

relation to outlet A

Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-stroke setting

Testoil-ISO 4113

 $0.3 \text{ mm} \pm 0.02$

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm ³
1.1 Timing device travel 1.2 Supply pump pressure	700 700	7,6-8,6 5,0-5,5	mm kp/cm²		
Full-load delivery without charge-air pressure Full-load delivery with charge-air	800	64,5-65,5	cm ³ /1000 strokes		2,5
pressure 1.4 Idle speed regulation	250	23,5-29,5	cm ³ /1000 strokes	1	3,0
1.5 Start (mec.) 196 bar 1.6 Full-load speed regulation	100 1100	mind.95,0 41,0-49,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value	s in brackets		
2.1 Timing device	rev/min mm	250-400(220 Start	-430)	700 (7,3-8,9)	950-1100 13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min kp/cm²	100 1,5-2,0(1,	3-2,2)	700 (4,8-5,7)	1050 6,5-7,0(6,3-7,2)
Overflow delivery	rev/min cm ³ /10 s	500 mind, 27	55-	1000 125(40-135)	1050 55-125(40-135)
2.3 Fuel deliveries				,	,
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strok	es	Charge-air pressure kp/cm²
End stop	Full	1140-1200 (1120-1220) 1100 1030 800 500	0 68,5-71, 58,5-60,	(40,0-50,0) 5 (67,5-72,5) (64,0-66,0) 5 (57,5-61,5)	
	Stop	1050	0		·
idle stop	Full	310-360 (290-380)	0		
End stop	Start	250 500 100 mind. 150	max. 56,(mind.95,(·

C1

BOSCH

Angle t	to the stop-plate	Pre-setting dimensions
Pump α β γ	= 25 ± 4° = 40 ± 8° = 30 - 6° = 60 ± 8°	Pump Dimension IV = - mm Dimension V = - mm
	6	

Re Item 4: Adjustment of spring-loaded starting/shutoff stop

Set start position at pump, i.e.: move speed-control lever to idle stop, move injected-quantity control lever to start position and test starting fuel delivery at stated cranking speed.

If control spool is installed correctly, starting fuel delivery must switch to full-load delivery before max. engine-speed stop is reached. Otherwise, control spool is to be turned through 180°.

Then set spring-loaded starting/shutoff stop without overriding spring in stop housing.

Note:

With stop check, spring-loaded stop is overriden and zero delivery must be attained.

WPP 001/4 STE 4,0 a

2. Edition

VA 4/100 H 1200 BR 145 0 460 304 069

supersedes

6.70

company engine

Steyr WD 410 t

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

Festoil-ISO 4113

0,3 _{mm}

Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel	800	4,8-5,9	mm		
1.2	Supply pump pressure	800	4,9-5,4	kp/cm²		
1.3	Full-load delivery without charge-air pressure	800	62,0-63,0	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		1
14	Idle speed regulation	250	16,0-22,0	cm ³ /1000 strokes		3,0
1.5	Start	100	mind.80,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1270	36,0-44,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value	s in brackets			
2.1 Timing device	rev/min		400-550(370-580)		1000-1150	
	mm	Start			8,7-9,4(8,4-9,7)	
2.2 Supply pump	rev/min	100		800	1200	
	kp/cm²	1,1-1,6(0,9	3-1,8)	(4,7-5,6)	6,3-6,8(6,1-7,0)	
Overflow delivery	rev/min	500			1000	
	cm ¹ /10 s	mind. 25		55-125(40-140)		
2.3 Fuel deliveries						
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²	
End stop	Full	1310-1360	0			
	.	(1290-1380) 1270		(35,0-45,0)		
		1150	63,0-66,5	(62,5-67,5)		
		800		(61,5-63,5)		
		500	00,5-03,5	(59,5-64,5)		
	Stop	1200	0			
idle stop	Full	320-380				
		(300-400)		(15,0-23,0)		
				(1090-2090)		
End stop	Start	100 110-210	mind.80,0			
				•		

SIE 4,0 a -2-
Pre-setting dimensions
Pump Dimension IV = 6,0 mm Dimension V = - mm

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WPP 001/4 IHC 3,5 b 2. Edition

En

VA 4/100 1250 BR 8-1 0 460 304 077 Nozzle-and-holder assembly 1.688 901 020 (172 + 3 bar) supersedes 6.69 company INC

engine.

D 206 / 8-41

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting

 $0.5 \text{ mm} \pm 0.02 (\pm 0.04)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

ODI-WEF 10174 B

			Pr	e-setting see revers	e side
1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	800	6,3-7,3	mm .		
1.2 Supply pump pressure	800	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	62,0-63,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1.4 Idle speed regulation	400	22,0-28,0	cm ³ /1000 strokes		3,0
1.5 Start 196 bar	100	mind. 85,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1290	46,0-54,0	cm ³ /1000 strokes		

2. Test Sp	ecification	NS Checking value	s in brackets		
2.1 Timing device	rev/min	350-500(320-	530)	800	1030-1170
•	mm	Start		(6,0-7,6)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100		800	1250
	kp/cm²	1,0-1,5(0,8-	1,7)	(4,7-5,6)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1000	1250
	cm ³ /10 s	mind. 27		55-125(40-135) 55-125(40-135)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1350-1390 (1330-1410)	0		·
		1370 1290 1200 800 500		(45,0-55,0) (63,5-68,5) (61,5-63,5) (53,5-58,5)	·
	Stop	1250	0 .		
idle stop	Full	480-530 (460-550) 400	0	(21,0-29,0)	
End stop	Start	100 500	mind. 85,0 35,0-50,0		•

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	BR 8-1 Pump Dimension IV= 4,0 mm Dimension V= - mm

WPP 001/4 MWM 5,1a

2. Edition

VA 6/100 H 1150 BR 35

0 460 306 068

supersedes

12.68

company

MWM

D 225

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

Testoil-ISO 4113

0,4 mm

Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
1.1 Timing device travel	700	5,5-6,5	mm		
1.2 Supply pump pressure	700	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1100	54,5-55,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1.4 Idle speed regulation	300	9,5-15,5	cm ³ /1000 strokes		3,0
1.5 Start (mec.)	100	mind. 70,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1190	31,0-39,0	cm 1/1000 strokes		

•	ecification rev/min	220-380 (190-4		700		920-1080
	mm	Start	(5,2-6,8)	8,7	7-9,4(8,4-9,7)
2 2 Supply pump	rev/min	100		700		1150
	kp/cm²	1,5-2,0(1,3-	2,2)	(4,7-5,6)	6,4	1-6,9(6,2-7,1)
Overflow delivery	rev/min	500		1000		
Overtion delivery	cm ³ /10 s	mind.25		55-100(40-1	10)	
2.3 Fuel deliveries						
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes			Charge-air pressure kp/cm²
End stop	Fuli	1240-1290 (1220-1310) 1190 1100 900 500	0 57,5-59,5 43,0-47,0 0	(30,0-40 (54,0-56 (56,5-60 (42,0-49	,0) ,5)	·
idle stop	Full	370-430 (350-450) 300	0	(8,5-16,	,5)	
	Start	100 500 mind. 150	mind.70,0 max. 37,5			

Angle to 1	he stop-plate	Pre-setting dimensions
β	= 25 ± 4° = 40 ± 8° = 30 - 8°	Pump Dimension IV - mm Dimension V - mm Dimensions for pre-setting
	= 60 ± 8°	Dimension I = Dimension II = According to the wear-parts list Dimension III= 34,4 mm

C8

VA 6/100 H 1500 CR 20

supersedes 10.76 IHC company D 310 engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

0,4 _{mm} Pre-stroke setting Plunger lift of 1,0 mm related to outlet "A"

2. Test Specifications Checking values in brackets

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
11	Timing device travel	1000	4,5-5,5	mm		
1.2	Supply pump pressure	1000	4,5-5,0	kp/cm²		
13	Full-load delivery without charge-air pressure	1200	65,5-66,5	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
14	Idle speed regulation	250	12,0-18,0	cm ³ /1000 strokes		3,0
1 5	Start 196 bar	100	mind.75,0	cm ³ /1000 strokes		
1.6	Full-toad speed regulation	1580	18,5-26,5	cm 1/1000 strokes		

•	rev/min	480-650 (450		1000	1400
	mm	Start	(4	,2-5,3)	7,9-8,6(7,6-8,9)
2 2 Supply pump	rev/min	200		1000	1500
	kp/cm²	0,9-1,4(0,7-	1,6) (4	,3-5,2)	6,7-7,2(6,5-7,3)
Overflow delivery	rev/min	500			1500
	cm ³ /10 s	55-100(40-11	0)		55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery tever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1650-1750 (1630-1770) 1580 1480-1500 1400 1200 500	0 Start 65,0-68,0 52,0-56,0	(65,0-67,0)	
	Stop	1500	0		
Idle stop	Full	300-400 (280-420) 250	0	(11,0-19,0)	
End stop	Start	100 220-300	mind. 75,0	•	

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 55 \pm 8^{\circ}$ $\gamma = 30 - 3^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump = 1,0 mm Dimension IV = 25,0 mm

WPP 001/4 IHC 5,8 d 2

1. Edition

En

restoil-ISO 4113

VA 6/100 H 1050 BR 21-2 0 460 306 117

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes company

engine

IHC D 358

Setting of the pointer at a stroke of 1 mm in

relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches

and Testers

Test Intructions and Test Equipment **VDT-WPP 161/4 B**

Pre-stroke setting

 $0.3_{mm} \pm 0.02(\pm 0.04)$

Pre-setting see reverse side

1. Settings	ev/min	Settings		Charge-air press. kp/cm ²	Difference in delivery cm ²
1.1 Timing device travel	800	7,3-8,3	·fnm		
1.2 Supply pump pressure	800	5,7-6,2	kp/cm ²		
1.3 Full-load delivery without	800	65,0-66,0	cm ³ /1000 strokes		2,5
charge-air pressure Full-load delivery with charge-air			cm³/1000 strokes		
pressure 1.4 Idle speed regulation	300	12,0-18,0	cm ³ /1000 strokes		3,0
	100	mind.85,0	cm ³ /1000 strokes		
1.5 Start (mech.) 196 bar 1.6 Full-load speed regulation	1130	31,0-39,0	cm ³ /1000 strokes		

2. Test Spe	ecificatio	NS Checking value	es in brackets	000	000 1000
2 1 Timing device	rev/min	300-450(270-	480)	800	880-1020
	mm	Start		(7,0-8,6)	9,7-10,4(9,4-10,7)
2.2 Supply-pump	rev/min	100	•	800	1050
	kp/cm²	1,8-2,3(1,6-	2,5)	(5,5-6,4)	6,7-7,2(6,5-7,4)
_				1000	
Overflow delivery	rev/min cm ³ /10 s			27-55(13-70)	
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
Enਈ stop	Fuli	1150-1220 (1130-1240) 1130 1000 800 500	0 67,5-70,5 66,5-69,5	(30,0-40,0) (66,5-71,5) (64,5-66,5) (65,5-70,5)	
	Stop	1050	0		
Idle stop	Full	400-460 (380-480) 300	0	(11,0-19,0)	
End stop	Start	100 500 mind.180	mind. 85,0 30,0-65,0	•	

Angle to the stop-plate	Pre-setting dimensions	
Pump a = 25 ± 4° B = 40 ± 8° y = 30 ~ 8° b = 60 ± 8°	Pump Cimension IV = 4,5 mm Dimension V = - mm	

WPP 001/4 IHC 5,8 d 2. Edition

4113

VA 6/100 H 1200 BR 21-1 -P Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) 0 460 306 110

supersedes IHC company D 358 engine

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** Test Intructions and Test Equipment YDT-WPP 161/4 2

5.72

 $0.3_{mm} \pm 0.02 (\pm 0.04)$ Pre-stroke setting

Pre-setting see revorse side

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	800	5,8-6,8	mm		
1.2 Supply pump pressure	800	5,0-5,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	64,5-65,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air	m		cm ³ /1000 strokes		
pressure 1.4 idle speed regulation	350	9,5-15,5	cm³/1000 strokes		3,0
1.5 Start (mec/h.) 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1.6 Full-load spe/ad regulation	1300	31,0-39,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio	ns Checking value	es in brackets		
2.1 Timing device	rev/min	330-470(300-	500)	800	1000-1150
	mm	Start	(!	5,5-7,1)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100		800	1200
	kp/cm²	1,5-2,0(1,3-	2,2) (4	4,8-5,7)	6,4-6,9(6,2-7,1)
Overflow delivery	rev/min			1000	
Oternow delivery	cm ³ /10 s		m	ind. 27	
2.3 Fuel deliveries		<u> </u>			
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1360-1410 (1340-1430) 1300 1200 800 500	1	(30,0-40,0) (67,0-72,0) (64,0-66,0) (57,5-62,5)	
	Stop	1200	0		
idle stop	Full	400-460 (380-480) 350	0	(8,5-16,5)	
End stop	Start	100 500 mind. 180	mind. 90,0 max. 47,5		

Angle to	o the stop-plate	Pre-setting dimensions	
Pump α β y δ	= 25 ± 4° = 45 ± 8° = 30 - 8° = 60 ± 8°	Pump = 2,0 mm Dimension IV Dimension V = - mm	

WPP 001/4 IHC 3,9 f

3. Edition

En

estoil-ISO 4113

VA 4/100 H 1250 CR 90 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

2. Test Specifications Checking values in brackets

Pre-stroke setting

0,5 mm

± 0,04

supersedes

3.76

engine.

IHC DT 239

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel	800	4,7-5,7	mm		
1.2	Supply pump pressure	800	5,0-5,5	kp/cm²		
1.3	Full-load delivery without charge-air pressure	800	79,0-80,0	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air			cm ³ /1000 strokes		1
1.4	pressure Idle speed regulation	400	17,0-23,0	cm ³ /1000 strokes		3,0
1.5	start 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1300	43,5-51,5	cm ³ /1000 strokes		

2.1 Timing device	rev/min mm	Start 210-340(180-	370) 400	800 1	1000 1080-1180
	1	0,7-1,7(0,4-	2,0) (4,4-6,	0) 6,2-7,2(5,	,9-7,5)6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	200		800	1250
	kp/cm²	1,8-2,3(1,6-	2,5)	(4,8-5,7)	6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500			1250
	cm ³ /10 s	55-100(40-11	0)		55-100(40-110)
2.3 Fuel deliveries					49
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1360-1410	0		
•		(1340-1430) 1300		(42,5-52,5)	
		1240-1260	Start	(42,3-32,3)	
		1200	75,5-78,5	(74,5-79,5)	
		800 500	78,0-81,0	(78,5-80,5) (77,0-82,0)	
		500	70,0-01,0	(77,0-02,0)	
	Stop	1250	0		
idle stop	Full	490-540	0		
		(470-560) 400		(16,0-24,0)	
End ston	Start	100 220-320	mind. 90,0	,,.	
End stop		220-320			

Angle to the stop-plate	Pre-setting devensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,0 mm Dimension V = 24,5 mm

46

WPP 001/4 IHC 5,8 b 1 2. Edition

En

VA 6/100 H 1100 CR 36

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes 11.73 IHC

company

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

XDD 358

Pre-stroke setting

 $0.3_{mm} \pm 0.04$

Test intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³		
1.1 Timing device travel	700	3,6-4,6	mm				
1.2 Supply pump pressure	700	5,7-6,2	kp/cm ²				
1.3 Full-load delivery without charge air pressure	800	66,5-67,5	cm ³ /1000 strokes	£	2,5		
Full-load delivery with charge-air			cm ³ /1000 strokes				
pressure 1.4 Idle speed regulation	300	7,0-13,0	cm ³ /1000 strokes		3,0		
1.5 Start 196 bar	100	mind.90,0	cm ³ /1000 strokes				
1.6 Full-load speed regulation	1160	31,0-39,0	cm ³ /1000 strokes				

2. Test Sp	ecificatio	NS Checking value	s in brackets		
2.1 Timing device	rev/min mm	Start 130-230(100- 1,0-2,0(0,7-	260 300 2,3) (3,3-4	700 ,9) 4,3-5,3(4	850 980-1100 ,0-5,6)5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min kp/cm²	200 3,2-3,7(3,0-	3,9)	700 (5,5-6,4)	1100 7,0-7,5(6,8-7,7)
Overflow delivery	rev/min cm ³ /10 s	500 55-100(40-11	0)		1100 55-100(40-110)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1180-1230 (1160-1250) 1160 1120-1140 1100 800 500	Start 71,5-74,5	(30,0-40,0) (70,5-75,5) (66,0-68,0) (61,0-66,0)	
	Stop	1100	0		
idle stop	Full	380-450 (360-470) 300	0	(6,0-14,0)	
End stop	Start	100 220-320	mind.90,0		

Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 50 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 3,6 mm Dimension V = 24,6 mm	

C18

WPP 001/4 FIA 2,6 c

3. Edition

0 460 313 019

VA 3/11 H 1200 CL 134-9 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

4.79 supersedes

company engine

Fiat

8035-04265

Setting of the pointer at a stroke of 1 mm in

2. Test Specifications

relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Senches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

 $0.7 \text{ mm} \pm 0.02(\pm 0.04)$

Charge-air press Difference in delivery kp/cm² Settings rev/min 1. Settings 4,55-4,65 mm 1.1 Timing device travel 800 4,8 -5,3 1.2 Supply pump pressure 800 cm3/1000 strokes 1.3 Full-load delivery without 68,0-69,0 2,5 800 charge-air pressure cm3/1000 strokes Full-load delivery with charge-air pressure cm³/1000 strakes 17,0-23,0 3,0 300 1.4 Idle speed regulation mind. 120.0 cm³/1000 strokes 100 1:5 Start cm3/1000 strokes 36,0-44,0 1300 1 6 Full-load speed regulation

Checking values in brackets

z. rest op	CALLIANTI	Checking value	Q 111 101 101 101 101 101 101 101 101 10		
2.1 Timing device	rev/min mm	Start 330-430(300- 1,8-2,8(1,5-	460) 60 3,1)(4,25-4	0 800 ,95)6,9-7,9(6	1050 1100-1230 ,6-8,2)8,9-9,6(8,6-9,9)
2.2 Supply pump	rev/min	200		800	1200
	kp/cm²	1,7-2,1(1,5-	2,3)	(4,6-5,5)	6,6-7,1(6,4-7,3)
Overflow delivery	rev/min cm ³ /10 s	500 55-100(40-11	0)		1200 55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1360-1410 (1340-1430) 1300 1250-1270 1200 800 500		(35,0-45,0) (60,0-65,0) (67,5-69,5) (61,5-67,5)	
	Stop	1200	0		
Idle stop	Full	340-400 (320-380) 300	0	(16,0-24,0)	
End stop	Start	100 110-230	mind. 120,	0	
Lilu scop		110 250			

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 45 \pm 8^{\circ}$ $V = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 3,80 mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 2,6 a 1

1. Edition

VA 3/110 H 1250 CL 134-6 Nozzle-and-holder assembly 0 460 313 016 1 688 901 020 (172 + 3 bar)

supersedes

company

engine

Fiat 8035-02201

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

relation to outlet A.

Test intructions and Test Equipment

Pre-stroke setting

 $0,7 \text{ mm} \pm 0,02 (\pm 0,04)$

VDT-WPP 161/4 B
Pre-setting see reverse side

			The senting sections.	
1. Settings	rev/min	Settings	Charge air press	Difference in delivery cm ³
1.1 Timing device travel	800	4,55-4,65 mm		
1.2 Supply pump pressure	800	4,8 -5,3 kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	66,5-67,5 cm ³ /1000		2,5
Full-load delivery with charge-air pressure		cm³/1000		
1.4 Idle speed regulation	300	17,0-23,0 cm ³ /1000	strokes	3,0
15 Start (autom.)	100	mind.120,0 cm ³ /1000	strokes	
1 6 Full-load speed regulation	1350	36,0-44,0 cm ³ /1000	strokes	

2. Test Sp	ecificatio	NS Checking value	s in brackets		
2.1 Timing device	rev/min mm	Start 330-430(300- 1,8-2,8(1,5-	460) 600 3,1)(4,25-4,	800 1 95)6,9-7,9(6	050 1100-1230 ,6-8,2) 8,9-9,6(8,6-9,9)
2 2 Supply pump	rev/min kp/cm²	200	2 21	800 (4,6-5,5)	1250 6,7-7,2(6,5-7,4)
Overflow delivery	rev/min cm ³ /10 s	min 500		(4,0-5,5)	1250 55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ³
End stop	Full	1420-1470 (1400-1490) 1350 1300-1320 1230 800 500	0 Start 61,0-64,0 61,0-65,0	(35,0-45,0) (60,0-65,0) (66,0-68,0) (60,0-66,0)	
	Stop	1250	0		
idle stop	Full	340-400 (320-420) 300	0	(16,0-24,0)	
	Start	100	mind. 120,0	0	
End_stop_		110-230			<u> </u>

Angle to the stop-plate	Pre-setting dimensions		
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 45 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 3,80 mm Dimension V = 26,40 mm		

(22

WPP 001/4 FIA 2,6 a 2. Edition

VA 3/110 H 1200 CL 134-5 0 460 313 015

Nozzle-and-holder assembly . 1 688 901 020 (172 + 3 bar)

7.73 supersedes Fiat

company engine

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

8035

Test Intructions and Test Equipment

VDT-WPP 161/4 B Pre-setting see reverse side

Pre-stroke setting

estoil-ISO 4113

 $0.7_{mm} \pm 0.02(\pm 0.04)$

Charge-air press kp/cm² Difference in delivery Settings rev/mm 1. Settings cm³ 4,1-5,1 800 1.1 Timing device travel 4,8-5,3 800 kp/cm² 1.2 Supply pump pressure 2,5 66,5-67,5 800 cm3/1000 strokes 1.3 Full-load delivery without charge-air pressure cm³/1000 strokes Full-load delivery with charge-air 17,0-23,0 3.0 300 cm3/1000 strokes 1.4 Idle speed regulation mind. 120,0 cm³/1000 strokes 100 1.5 Start 36,0-44,0 1300 cm3/1000 strakes 1 6 Full-load speed regulation

2. Test Sp	ecificat	Checking values in bracke	its	
2.1 Timing device	rev/min mm	Start 330-430(300-460) 1,8-2,8(1,5-3,1)	600 800 105 3,8-5,4) 6,9-7,9(6,6-8	
2.2 Supply pump	rev/min	200	800	1200
	kp/cm²	1,7-2,1(1,5-2,3)	(4,6-5,5)	6,6-7,1(6,4-7,3)
Overflow delivery	rev/min	500		1200
	cm ³ /10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel o	deliveries
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Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1360-1410 (1340-1430)	0		
		1300		(35,0-45,0)	
		1250-1270	Start		
	,	1180 800	60,5-63,5	(59,5-64,5) (66,0-68,0)	
		500	61,0-65,0	(60,0-66,0)	
	Stop	1200	0		
Idle stop	Full	340-400 (320-420) 300	0	(16,0-24,0)	
		100	mind. 65,0		
End stop	Start	110-230			•

Angle to the stop plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 45 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 3,80 mm Dimension V = 26,40 mm

(24

WPP 001/4 FIA 3,5 c

2. Edition

0 460 314 038

VA 4/110 M 1250 CL 136-8 ·Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes

10.77

company engine

Fiat 8045-02270

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches

and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-stroke setting

 $0.5 \text{ mm} \pm 0.02(\pm 0.04)$

Pre-setting see reverse side

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ²
1.2 1.3 1.4 1.5	Timing device travel Supply pump pressure Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure ldle speed regulation Start	1000 1000 1250 300 100	4,7-5,5 5,3-5,8 65,5-68,5 22,0-28,0 mind.110,0	mm kp/cm² cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes		2,5 3,0
1.6	Full-load speed regulation	1400	26,0-34,0	CIII / 1000 Silokes	<u> </u>	

2. Test Sp				4000	4400 4050
2.1 Timing device	rev/min	420-570(390	•		
	mm	Start	1,5-2,5	(1,2-2,8)(4,3-	5,8) 6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200		1000	1250
	kp/cm²	1,5-2,0(1,3	-1,8)	(5,1-6,0	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500			1250
Overnow denivery	cm ³ /10 s	55-100(40-1	10)		55-100(40-110)
23 Fuel deliveries	<u> </u>				
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1450-1500 (1430-1520) 1400 1300-1330 1250 800 500	67,5-68,5 59,0-62,0	(25,0-35,0) (64,5-69,5) (66,5-69,5) (58,0-63,0)	
	Stop	1250	0		
Idle stop	Full	400-450 (380-470) 300	0	(21,0-29,0)	
	Start	100	mind.110,	0	
End stop		110-230			

Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 35 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 3,60 mm Dimension V = 24,65 mm	

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Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 FIA 3,5 a

2. Edition

VA 4/110 H 1200 CL 136-4 0 460 314 023 supersedes 7.73 company Fiat engine 8045

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-stroke setting 0,5 mm

2. Test Specifications

Pre-setting see reverse side

Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings	Charge-air press kp/cm	Difference in delivery cm ³
1 1 Timing device travel	800	3,5-4,5 mm		
1 2 Supply pump pressure	800	5,3-5,8 kp/cm ²		
1.3 Full-load delivery without	800	68,0-69,0 cm ³ /1000 stroke	s	2,5
charge-air pressure Full-load delivery with charge-air		cm ³ /1000 stroke	s	•
pressure 1.4 idle speed regulation	300	17,0-23,0 cm ⁴ /1000 stroke	s	3,0
1 5 Start (autom.)	100	mind. 130,0 _{cm³/1000 stroke}	s	
1.6 Full-load speed regulation	1270	36,0-44,0 cm /1000 stroke		

Checking values in brackets

2.1 Timing device	rev/min	220-370(190	-340)	500	800	1100-1230
2	mm	Start	1,5-2,5	(1,2-2,8)	(3,2-4,8)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min kp/cm²	200	-2.5)		800 (5.1-6.0)	1200 6,9-7,4(6,7-7,6)
Overflow delivery	rev/min cm³/10 s	500 55-100(40-1				1200 55-100(40-110)
23 Fuel deliveries						
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strok	es	Cha	rge-air pressure kp/cm ²
End stop	Full	1330-1380 (1310-1400) 1270 1220-1240 1180 800 500		(35,0-6 0 (64,0-6 (67,0-6 0 (64,0-6	69,0) 70,0)	
	Stop	1200	0			
Idle stop	Full	340-400 (320-420) 300	0	(16,0-	24,0)	
End stop	Start	100 110-230	mind. 13	0,0+	•	

Angle to the stop-plate	Pre-setting dimensions		
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 3,0 mm Dimension V = 24,6 MM		

WPP 001/4 IHC 5,1 i 2. Edition

VA 6/100 H 1050 BR 21-3 Nozzle-and-holder assembly 0 460 306 136

2. Test Specifications

2.1 Timing device rev/min

1 688 901 020 (172 + 3 bar)

supersedes company4.73

engine

IHC D 310

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

 $0.3 \text{ mm} \pm 0.02(\pm 0.04)$ Pre-stroke setting

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

950-1050

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

		File Setting See reverse side			
1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	900	5,8-6,8	mm		
1.2 Supply pump pressure	900	6,0-6,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	57,5-58,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1 4 Idle speed regulation	500	17,0-23,0	cm ³ /1000 strokes		3,0
15 Start 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1150	26,0-34,0	cm ³ /1000 strokes		

900

Checking values in brackets

| 480-620 (450-650)

	mm	Start			6,7-7,4(6,4-7,7)
2.2 Supply pump	rev/min	100	0.01	900	1150
Overflow delivery	kp/cm² rev/min cm ³ /10 s	2,1-2,6(1,9-500 mind. 27	-2,8)	(5,8-6,7) 1000 27-55(13-70	6,6-7,1(6,4-7,3)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1200-1250 1150 1000 800 500	0 61,0-63.0 55,0-58,0	(25,0-35,0) (60,0-64,0) (57,0-59,0) (54,0-59,0)	-
	Stop	1050	0		
idle stop	Full	580-650 (560-630) 500	0	(16 - 24)	
End stop	Start	100 500 mind. 180	mind. 90,0 mind. 32,5		

BOSCH

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 35 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 2,0 mm Dimension V = 24,6 mm

WPP 001/4 IHC 3,5c 1 2. Edition

VA 4/100 H 1050 CR 12-8 Nozzle-and-holder assembly 1 688 901 020 (1/2 + 3 bar)

4.73 supersedes

company engine

IHC D 206

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers **Test Intructions and Test Equipment**

850-1000

600

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

2.1 Timing device

± 0,04 0,5 mm

2. Test Specifications Checking values in brackets

rev/min

200-330(170-360)

Charge-air press | Difference in delivery kp/cm² Settings 1. Settings rev/min 1.1 Timing device travel 600 2,6-3,6 mm 600 4,1-4,6 kp/cm² 1.2 Supply pump pressure 1.3 Full-load delivery without 800 62,5-63,5 cm3/1000 strokes 2,5 charge-air pressure Full-load delivery with charge-air cm3/1000 strokes pressure 350 12,0-18,0 3,0 cm3/1000 strokes 14 Idle speed regulation 196 bar 100 mind.100,0 cm³/1000 strokes 1100 31,0-39,0 cm3/1000 strokes 16 Full-load speed regulation

400

	mm	Start	1,3-2,	3(1,0-2,6) (2,	,3-3,9)5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min	200		600	1050
	kp/cm²	1,7-2,2(1,5	-2,0)	(3,9-4,8)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500			1050
•	cm ³ /10 s	55-100(40-1	10)		55-100(40-110)
23 Fuel deliveries	•				
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1150-1200 (1130-1220) 1100 1050-1070 1020 800 500		(30,0-40,0) (62,5-67,5) (62,0-64,0) (56,5-61,5)	
	Stop	1050	0		
idle stop	Full	400-450 (380-470)	0		
		350		(11,0-19,0)	
	Start	100	mind.100,0		

End stop

220-300

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 2,4 mm Dimension V = 24,6 mm

WPP 001/4 IHC 3,9a 2

3. Edition

VA 4/100 H 1100 CR 12-3 Nozzle-and-holder assembly

1 688 901 020 (172 + 3 bar)

supersedes

3.76

company

engine.

IHC D 239

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-stroke setting

Testoil-ISO 4113

 $0.5 \, \text{mm} \pm 0.04$

Pre-setting see reverse side Difference in delivery cm³ Charge-air press kp/cm² rev/min Settings 1. Settings 800 3,2-4,0 1.1 Timing device travel

800 4,8-5,3 kp/cm² 1.2 Supply pump pressure 800 68,5-69,5 2,5 cm³/1000 strokes 1.3 Full-load delivery without

charge air pressure cm³/1000 strokes Full-load delivery with charge-air 12,0-18,0 3,0 400 cm3/1000 strokes 1.4 idle speed regulation

100

mind.85.0 cm³/1000 strokes 1.5 Start 1150 33,5-41,5 cm3/1000 strokes 1.6 Full-load speed regulation

2. Test Sp	ecificati	ONS Checking values in brad	ckets		
2.1 Timing device	rev/min	280-430(250-460)	500	800	1000-1100
	mm	Start 0	,8-1,8(0,5-2,1)	(2,9-4,3)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		800	1100
	kp/cm²	1,8-2,3(1,6-2,5))	(4,6-5,5)6	,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500			1100
	cm ³ /10 s	55-100(40-110)			55-100(40-110)

2.3	Fuel	deliveries
-----	-------------	------------

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1180-1250 (1160-1270)	0		
		1150		(32,5-42,5)	
		1100-1120	Start		
		1050	72,0-75,0	(71,0-76,0)	
		800		(68,0-70,0)	
		500	65,0-68,0	(64,0-69,0)	
	Stop	1100	0		
die stop	Full	430-500	0		
		(410-520) 400		(11,0-19,0)	
				(11,0 13,0)	
	Start	100	mind.85,0		
End stop	1	220-300			1

Angle to the stop-plate	Pre-sefting dimensions		
Pump $a = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 1,7 mm Dimension V = 24,6 mm		

46

WPP 001/4 IHC 3,9b 1

2. Edition

En

VA 4/100 H 1200 CR 12-1 CR 12-9

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes IHC company D 239

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

engine

Pre-stroke setting

 $0.5_{mm} \pm 0.04$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel	800	3,2-4,2	mm		
1.2	Supply pump pressure	800	5,3-5,8	kp/cm²		
1.3	Full-load delivery without charge-air pressure	800	69,5-70,5	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air			cm ³ /1000 strokes		
1.4	pressure Idle speed regulation	350	17,0-23,0	cm ³ /1000 strokes		3,0
1.5	start 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1250	26,0-34,0	cm ³ /1000 strokes		

2. Test Sp	ecificati	ONS Checking values in brackets			
2.1 Timing device	rev/min	200-350(170-380)	500	800	1000-1150
	mm	Start 1,3-	-2,3(1,0-2,6)	(2,9-4,5)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		800	1200
kp/cm²		2,2-2,7(2,0-2,9)	(5	,1-6,0) 6,	7-7,2(6,5-7,4)
Overflow delivery	rev/min	500			1200
	cm ³ /10 s	55-100(40-110)		5	5-100(40-110)

Overflow delivery	rev/min cm ³ /10 s	55-100(40-1	10)		1200 55-100(40-110)
23 Fuel deliveries		<u> </u>			
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Fult	1270-1320 (1250-1340) 1250 1200-1220 1180 800 500		(25,0-35,0) (70,0-75,0) (69,0-71,0) (64,0-69,0)	
	Stop	1200	0	•	
Idle stop	Full	430-500 (410-520) 350	0	(16,0-24,0)	
	Start	100	mind. 90,0		

D11

BOSCH

End stop

220-300

Angle to the stop-plate	Pre-setting dimensions
Pump $a = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $v = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Remension IV = 2,0 mm Cimension V = 24,6 mm

WPP 001/4 IHC 2,4 e

2. Edition

VA 3/100 H 1100 CR 9-5

Test Specifications

Pre-stroke setting

Testoil-ISO 4113

supersedes

company

8.77 IHC

engine

D 155/503

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

 $0.3^{mm} \pm 0.02(\pm 0.04)$ Plunger lift of 1,0 mm related to outlet "A"

Pre-setting see reverse side

1.	Settings	rev/min	Settings		Charge-air press kp/cm'	Difference in delivery cm ³
1.1	Timing device travel	700	3,6-4,6	mm		
1.2	Supply pump pressure	700	4,4-4,9	kp/cm ²		
1.3	Full-load delivery without charge-air pressure	800	61,0-62,0	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ¹ /1000 strokes		
14	idle speed regulation	350	12,0-18,0	cm 1/1000 strokes		3,0
15	Start 196 bar	100	mind.80,0	cm ³ /1000 strokes		
16	Full-load speed regulation	1150	36,0-44,0	cm ¹ /1000 strokes		

2. 1est 5p	ecilicatio	NS Checking value	s in brackets		
2.1 Timing device	rev/min mm	160-300(130 Start	-330) 4 1,6-2,6(1	7 1,3-2,9) (3,3-	00 800-950 4,9) 4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min kp/cm²	200 1,7-2,3(1,5	-2,5)	7 (4,2-5	00 1100 ,1) 5,6-6,1(5,4-6,3)
Overflow delivery	rev/min cm³/10 s	500 55-100(40-1	10)		1100 55-100(40-110)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1180-1230 (1160-1250) 1150 1050 800 500	1	(35,0-45,0) (59,5-64,5) (60,5-62,5) (50,5-55,5)	
	Stop	1100	0		
Idle stop	Full	450-530 (430-550) 350	0	(11,0-19,0)	
-	Start	100	mind.80,0	,,a,	
Fnd stop		220-320		•	

Pre-setting dimensions		
n		
n		

WPP 001/4 IHC 2,4c 2 3. Edition

En

VA 3/100 H 1100 CR 9-3 CR 9-4

Testoil-ISO 4113

supersedes 3.76 IHC company

D 155 X 36 D 155-E 453

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment **VDT-WPP 161/4 B**

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

Pre-setting see reverse side

Pre-stroke setting $0.3^{mm} \pm 0.04$ Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	700	3,2-4,0	mm		
1.2 Supply pump pressure	700	4,3-4,8	kp/cm²	,	
1 3 Full-load delivery without charge-air pressure	800	63,0-64,0	cm ³ /1000 sirokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1 4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		3,0
15 Start 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1150	31,0-39,0	cm ³ /1000 strokes	•	

2. Test Sp	ecificatio	NS Checking value	es in brackets			
2.1 Timing device	rev/min	200-350(170	-380) 40	0	700	900-1050
	mm	Start	0,9-1,9(0,6-2,2) (2,9-4,3) 4	,7-5,4(4,4-5,7)
2 2 Supply pump	rev/min	200			700	1100
	kp/cm²	1,8-2,3(1,6	-2,5)		(4,1-5,0)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500				1100
	cm ³ /10 s	55-100(40-1	10)			55-100(40-110)
23 Fuel deliveries			4			
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air	pressure kp/cm²
End stop	Full	1200-1250 (1180-1270) 1150 1100-1130 1080 800 500		(30,0-40,0 (64,5-69,5 (62,5-64,5 (54,0-59,0)	
	Stop	1100	0			
Idle stop	Full	430-500 (410-520) 300	0	(16,0-24,0)	
	Ştart	100	mind.90,0		•	
End stop		220-300		•		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 45 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 6,5 mm Dimension V = 25,0 mm

WPP 001/4 IHC 5,8 f 5. Edition

estoil-ISO 4113

VA 6/100 H 1250 CR 82 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) 0 460 306 164

supersedes 5.77 IHC D 358

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers Test Intructions and Test Equipment

Pre-stroke setting

VDT-WPP 161/4 B Pre-setting see reverse side

 $0.3 \text{ mm} \pm 0.04$

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel	800	3,1-4,1	mm		
1.2	Supply pump pressure	800	5,3-5,8	kp/cm ²	,	
1.3	Full-load delivery without charge-air pressure	800	73,0-74,0	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		1
1.4	Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0
15	Start	100	mind.90,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1330	31,0-39,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio				•
•	rev/min	250-400(220-	430) 45	50 800	1100-1250
	mm	Start-	0,8-1,8(0,	,5-2,1) (2,8-4	,4) 5,1-5,8(4,8-6,1)
2.2 Supply pump	rev/min	200		800	1250
are output hamp	kp/cm ²	2,0-2,5(1,8-	2,7)	(5,1-6,0) 6,9-7,4(6,7-7,6)
Overflow delivery	rev/min	500			1250
Overtiow delivery	cm ³ /10 s	55-100(40-11	0)		55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	_	Charge-air pressure kp/cm ²
End slop	Full	1380-1450 (1360-1470) 1330 1260-1280 1220 800 500	Start 76,5-79,5	(30,0-40,0) (75,5-80,5) (72,5-74,5) (66,5-71,5)	
	Stop	1250	0		
Idle stop	Full	480-550 (460-570) 350	0	(11,0-19,0)	
End stop	Start	100 220-300	mind. 90,0		
					<u> </u>

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 55 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 2,6 mm Dimension V = 24,6 mm

WPP 001/4 IHC 4,4 b

3. Edition

0 460 314 029

VA 4/110 H 1250 CR 93 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes 4.79

company IHC

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

2. Test Specifications Checking values in brackets

D 268 engine

Pre-stroke setting

Festoil-ISO 4113

 $0.5 \text{ mm} \pm 0.02(\pm 0.04)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel	1000	6,0-7,0	mm .		
1.2	Supply pump pressure	1000	5,5-6,0	kp/cm ²		
1.3	Full-load delivery without charge-air pressure	800	73,5-74,5	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
14	Idle speed regulation	350	17,0-23,0	cm ³ /1000 strokes		3,0
1 5	Start 196 bar	100	mind.100,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1350	26,0-34,0	cm ³ /1000 strokes		

			500	1000	1030-1180
mm ,	Start	0,8-1	,8(0,5-2,1)	(5,7-7,3)	7,0-7,7(6,7-8,0)
rev/min	. 200			1000	1250
kp/cm²	1,5-2,0(1,3	-2,2)		(5,3-6,2)	6,2-6,7(6,0-6,9)
rev/min			500		1250
cm ³ /10 s		55-100	0(40-110)		55-100(40-110)
<u> </u>	<u> </u>				
Delivery lever	rev/min	cm ³ /1000 strokes	\$	Charge-aii	r pressure kp/cm ²
Full	1410-1460 (1390-1480) 1350 1260-1280 1200 800 500		(68,0-73, (73,0-75,	0)	
Stop	1250	0			
Full	450-500 (430-520) 350	0	(16,0-24,	0)	
Start	100 220-320	mind.100,			
	rev/min mm rev/min kp/cm² rev/min cm³/10 s Delivery lever Full Stop Full	rev/min	Start 330-430 (300-460) Start 0,8-1 200 200 1,5-2,0 (1,3-2,2) 200 20	rev/min	rev/min 330-430(300-460) 500 1000 mm Start 0,8-1,8(0,5-2,1) (5,7-7,3) 200 1000 kp/cm' 1,5-2,0(1,3-2,2) (5,3-6,2) 500 55-100(40-110) 500 55-100(40-110)

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 2,60 mm Dimension V = 24,65 mm

0.5 mm

Plunger lift of 1,0 mm related to outlet "A"

WPP 001/4 IHC 5,8 v 1. Edition

VA 4/100 H 1250 CR 410 0 460 304 247

Pre-stroke setting

supersedes

engine

IHC company D 239

Nozzle-and-holder assembly

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

1 688 901 020 (172 + 3 bar)

1.	Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
1.1	Timing device travel	1000	5,9-6,7	mm		
12	Supply pump pressure	1000	5,7-6,2	kp/cm²		
1.3	Full-load delivery without charge-air pressure	800	79,0-80,0	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
14	Idle speed regulation	400	17,0-23,0	cm ³ /1000 strokes		3,0
15	Start	100	mind.90,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1300	43,5-51,5	cm ³ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value	s in brackets		
2.1 Timing device	rev/min		600	1000	1250
	mm	Start 1,	4-2,4(1,1-2,	7) (5,6-7,0)	6,9-7,6(6,6-7,9)
22 Supply pump	rev/min	200		1000	1250
	kp/cm²	1,7-2,2(1,5	-2,4)	(5,5-6,4)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500			1250
	cm³/10 s	55-100(40-1	10)		55-100(40-110)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1340-1390 (1320-1410) 1300 1200 eng	0 75,5-78,5 78,0-81,0	(42,5-52,5) (74,5-79,5) (78,5-80,5) (77.0-82,0)	·
	Stop	1250	0		
idle stop	Full	480-530 (460-550) 400	0	(16,0-24,0)	
	Start	100	mind.90,0		
End stop		260-360		•	_

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = - mm Dimension V = 24,65 mm

WPP 001/4 IHC 5,8 q 5

1. Edition

En

VA 3/10 H 1200 CR 409 CR 409 P

2. Test Specifications

supersedes

company IHC

engine D 159/53 HP

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,3 mm
Plunger lift of 1,0 mm related to outlet "A"

1.	. Settings	rev/min	Settings		Charge-air press kp/cm ⁻¹	Difference in delivery
1,1	Timing device travel	1000	4,8-5,8	mm		
1.2	Supply pump pressure	1000	5,6-6,1	kp/cm²		
1.3	Full-load delivery without charge-air pressure	800	70,0-71,0	cm³/1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1.4	Idle speed regulation	375	12,0-18,0	cm ³ /1000 strokes		3,0
15	Start	100	mind.90,0	cm ³ /1000 strokes		
1 6	Full-load speed regulation	1300	26,0-34,0	cm³/1000 strokes		

Checking values in brackets

2.1 Timing device	rev/min	Checking Value	600	1000	1200
	mm	Start 1,	0-2,0(0,7-2,	3) (4,5-6,1)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200		1000	1200
	kp/cm²	1,7-2,2(1,5	-2,4)	(5,4-6,3)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500		·	1200
	cm ³ /10 s	55-100(40-1	10)		55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Fuli	1340-1400 (1320-1420) 1300 1180 800 500	72,0-75,0 64,5-67,5	(25,0-35,0) (71,0-76,0) (69,5-71,5) (63,5-68,5)	
	Stop	1200	0		
Idle stop	Full	420-470 (400-490) 375	0	(11,0-19,0)	
End stop	Start	100 260-360	mind.90,0	•	·

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 50 \pm 8^{\circ}$ $v = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = - mm Dimension V = 24,65 mm

WPP 001/4 IHC 3,9 a 1

5. Edition

VA 4/100 H 1100 CR 12-2

2. Test Specifications

2.1 Timing device | rev/min

6.78 supersedes IHC company

D 239 engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches**

910-1020

Test Intructions and Test Equipment

VDT-WPP 161/4 B

700

Pre-setting see reverse side

Pre-stroke setting

Testoil-ISO 4113

0.5 mm

 \pm 0,02 (\pm 0,04)

Plunger lift of 1.0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	700	2,9-3,9	mm		
1 2 Supply pump pressure	700	2,6-3,1	kp/cm ²		
1.3 Full-load delivery without charge-air pressure	800	62,5-63,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1 4 Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0
1 5 Start 196 bar	100	mind.100,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1150	31,0-39,0	cm ³ /1000 strokes		

400

Checking values in brackets

180-320(150-350)

	1.00,,,,,,,,,	100 320(130	330) 400	, ,	310 1020
	mm	Start	0,9-1,9(0	,6-2,2) (2,6-	4,2) 4,7-5,4(4,4-5,7)
2 2 Supply pump	rev/min	200		70	1100
	kp/cm²	1,9-2,4(1,7-	2,6)	(2,4-3	3,3) 6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500			1100
·	cm ³ /10 s	55-100(40-11	0)		55-100(40-110)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1200-1250 (1180-1270) 1150 1100-1130 1080 800 500	0 Start 61,5-64,5 56,0-59,0	(30,0-40,0) (60,5-65,5) (62,0-63,0) (55,0-60,0)	
Idle stop	Full Start	400-460 (380-480) 350 100 220-300	0 mind.100,0	(11,0-19,0)	

Angle to the stop-plate	Pre-setting dimensions
Pump $a = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 2,00 mm Dimension V = 24,65 mm

WPP 001/4 IHC 3,5 a 1

1. Edition

VA 4/100 H 1050 BR 8

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes'

4.69 IHC

company engine.

D 206

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for

and Testers Test Intructions and Test Equipment

Bosch Fuel Injection Pump Test Benches

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

Testoil-ISO 4113

0,5 _{mm}

 \pm 0,02 (\pm 0,04)

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	600	7,5-8,5	mm		
1.2 Supply pump pressure	600	4,7-5,2	kp/cm²		
1.3 Full-load delivery without	800	64,0-65,0	cm ³ /1000 strokes		2,5
charge-air pressure Full-load delivery with charge-air			cm³/1000 strokes		
pressure 1.4 Idle speed regulation	350	17,0-23,0	cm ³ /1000 strokes		3,0
1.5 Start	100	mind.85,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1130	26,0-34,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value	s in brackets	600	040 4000
2.1 Timing device	rev/min	200-370(170-	400)	600	840-1000
	mm	Start		(7,2-8,8)	3,7-14,4 (13,4-14,7)
aa Cumalu auron	soulmin	100		600	1050
2.2 Supply pump	rev/min kp/cm²	1,6-2,1 (1,4	-2,3)	(4,5-5,4)	6,7-7,2(6,5-7,4)
		500		1000	1050
Overflow delivery	rev/min cm ³ /10 s	mind.27			55-125(40-125)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes) 	Charge-air pressure kp/cm ²
End stop	Full	1150-1200 (1130-1220) 1130 1030 800 500	57,0-60,0	(25,0-35,0) (66,0-71,0) (63,5-65,5) (56,0-61,0)	
	Stop	1050	0		
idle stop	Full	390-440 (370-460)	0		
: 		350		(16,0-24,0)	
	Start	100	mind.85,0		
End stop	west t	500	35,0-52,0	(34,0-53,0)	

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 35 \pm 8^{\circ}$ $v = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 2,5 mm Dimension V = - mm Dimension I = Dimension II = According to the wear-parts list Dimension III = - mm Dimension IV = 2,5 mm (s.a.BMP)

WPP 001/4 FIA 2,3 a

3. Edition

VA 3/110 H 1200 BL 134 0 460 313 005

2. Test Specifications

7.71 supersedes Fiat company 853 engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,5 $_{\text{mm}}$ Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
1.1 Timing device travel	700	5,8-6,8	mm		
1.2 Supply pump pressure	700	4,2-4,7	kp/cm²		
1.3 Full-load delivery without	800	59,0-60,0	cm ³ /1000 strokes		2,5
charge-air pressure Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1.4 Idle speed regulation	300	17,0-23,0	cm ³ /1000 strokes		3,0
1 5 Start	100	mind.130,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1300	26,0-34,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value	es in brackets		
2.1 Timing device	rev/min	170-320 (140	-350)	700	900-1040
	mm	Start		(5,5-7,1)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100		700	1200
	kp/cm²	0,8-1,3(0,6-	1,5)	(4,0-4,9)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500			1200
	cm³/10 s	mind.25			55-125(40-140)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	S	Charge-air pressure kp/cm²
End stop	Full	1330-1380 (1310-1400) 1300 1180 800 500	0 56,5-59,5 52,0-56,0		
	Stop	1200	0	ο	
ldle stop	Full	330-400 (310-420) 300	0	(16,0-24,0)	
End stop	Start	100 130-230	mind.130,		

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 44 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 1,0 mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 9,0 mm Dimension III = 35,3 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 2,0 a

3. Edition

En

VA 2/100 H 1100 BR 142 0 460 302 002

Pre-stroke setting

12.71 supersedes

company

engine

Steyr WD 210

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Plunger lift of 1,0 mm related to outlet "B"

0,3 mm

Test Specifications

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	700	3,8-4,8	mm		
1.2 Supply pump pressure	700	4,2-4,9	kp/cm²		
1.3 Full-load delivery without	900	59,5-60,5	cm ³ /1000 strokes		2,5
charge-air pressure Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1 4 Idle speed regulation	250	13,0-19,0	cm ³ /1000 strokes		3,0
1 5 Start	100	mind.80,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1180	19,0-27,0	cm ³ /1000 strokes		

2. lest Sp 21 Timing device	rev/min	NS Checking value 420-530(390-	560)	700	960-1060
	mm	Start .		(3,5-5,1)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100		700	1000
	kp/cm ²	1,0-1,5(0,8-	1,7)	(4,0-5,1)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500			1000
Overnow delivery	cm ³ /10 s	mind. 25			55-125(40-140)
23 Fuel deliveries	-				
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1220-1280 (1200-1300)	0	(40 00)	
		1180 1050	57,5-60,5	(18 - 28) (56,5-61,5) (59,0-61,0)	
		900 500	54,0-57,0	(59,0-61,0) (53,0-58,0)	
	Stop	1100	0		
idle stop	Full	300-360 (280-380)	0	(12,0-20,0)	
_		250	mind on n	(12,0-20,0)	
End stop	Start	100 110-210	mind. 80,0		

Angle to the stop-plate	Pre-setting dimensions
Pump $_{\alpha} = 25 \pm 4^{\circ}$ $_{\beta} = 35 \pm 8^{\circ}$ $_{\gamma} = 30 - 8^{\circ}$ $_{\delta} = 60 + 8^{\circ}$	Pump Dimension IV = 2,0 mm Dimension V = - mm

WPP 001/4 FIA 2,3 a 3

1. Edition

En

VA 3/110 H 1100 BL 134-1 0 460 313 006

2. Test Specifications

supersedes

company

Fiat

engine

853.10

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting $0.5\,$ mm Plunger lift of $1.0\,$ mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
1.1 Timing device travel	700	5,3-6,3	mm		
1 2 Supply pump pressure	700	4,3-4,8	kp/cm ²		
1.3 Full-load delivery without charge-air pressure	800	55,5-56,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm ³ /1000 strokes		3,0
1 5 Start	100	mind.130,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1180	42,0-48,0	cm ³ /1000 strokes		

Checking values in brackets

2. 1631 3p	ecilicatio	Checking value	s in prackets			
2.1 Timing device	rev/min	220-370(190-	-400)	700	940-1090	
	mm	Start		(5,0-6,6)	8,7-9,4(8,4-9,7)	
2.2 Supply pump	rev/min	100		700	1100	
	kp/cm ²	1,0-1,5(0,8	-1,7)	(4,1-5,0)	5,9-6,4(5,7-6,6)	
Overflow delivery	rev/min	500			1100	
	cm ³ /10 s	mind. 25			55-125(40-140)	
23 Fuel deliveries			<u> </u>			
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²	
End stop	Full	1230-1260 (1210-1280) 1180 1100 800 500	0 42,0-48,0 53,5-56,5 50,0-53,0	(41;0-49,0) (52;5-57,5) (55;0-57,0) (49;0-54,0)		
	Stop	11.00	0			
idle stop	Full	330-400 (310-420) 300	0	(16,0-24,0)		
End stop	Start	100 130-230	mind.130,0	•		

E9

BOSCH

Angle to the stop-plate	Pre-setting dimensions		
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 2,0 mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 9,0 mm Dimension III = 35,3 mm		

0,7 _{mm}

-4 Considirations

Plunger lift of 1,0 mm related to outlet "A"

WPP 001/4 FIA 2,3 a 2

2. Edition

VA 3/110 H 1300 BL 134-2 0 460 313 007

Pre-stroke setting

7.77 supersedes Fiat company 853 engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm	Difference in delivery cm ³
1.1 Timing device travel	800	6,3-7,3	mm		
1.2 Supply pump pressure	800	4,4-4,9	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	60,5-61,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1 4 Idle speed regulation	300	17,0-23,0	cm ³ /1000 strokes		3,0
1.5 Start	100	mind.110,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1400	37,0-43,0	cm ³ /1000 strokes		

2. Test Spe	ecificatio	NS Checking value	s in brackets		
2.1 Timing device	rev/min	360-500(330-530)		800	1100-1250
	mm	Start		(6,0-7,6)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	100		1300
a.e. ouppry pomp	kp/cm ²	0,6-1,1(0,4	-1,3)	(4,2-5,1)	6,7-7,2(6,5-7,4)
Occardia de la locación		500		1000	
Overflow delivery	rev/min cm ³ /10 s			55-125(40-140)	
23 Fuel deliveries		<u> </u>	1		
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1450-1510 (1430-1530) 1400 1250 800 500	51,5-54,5	(36,0-44,0) (55,0-60,0) (60,0-62,0) (50,5-55,5)	
	Stop	1300	0		
idle stop	Full .	380-430 (360-450) 300	0	(16,0-24,0)	
End stop	Start	100 110-230	mind.110,0	•	·

Angle to the stop-plate	Pre-setting dimensions		
Pump $a = 25 \pm 4^{\circ}$ $\beta = 45 \pm 8^{\circ}$ $v = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 2,5 mm (s.a.BMP 161/32) Dimension V = - mm		

WPP 001/4 FIA 2,3 b

2. Edition

VA 3/110 H 1100 BL 134-3 0 460 313 011

Test Specifications

supersedes

5.72

company engine

Fiat 853-10

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

0,7 mm Pre-stroke setting Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge air press kp/cm	Difference in delivery cm ³
1 1 Timing device travel	800	6,3-7,3	mm	· · · · · · · · · · · · · · · · · · ·	
1 2 Supply pump pressure	800	4,5-5,0	kp/cm ³		
1.3 Fulf-l6ad delivery without charge-air pressure	800	58,0-59,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure	ĵ 	= -	cm ³ /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm ³ /1000 strokes		3,0
1 5 Start	100	mind.130,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1100	28,5-36,5	cm ³ /1000 strokes		

2. Test Sp		NS Checking value	s & brackets		
2 1 Timing device	rev/min	370-520(340	-550)	800	950-1100
	mm	Start		(6,0-7,6)	9,7-10,4(9,4-10,7)
2 2 Supply pump	rev/min	100		800	1100
	kp/cm ²	0,7-1,2(0,5	-1,4)	(4,3-5,2)	5,9-6,4(5,7-5,6)
Overflow delivery	rev/min	500		1000	
	cm ³ /10 s	mind. 25		55-125(40-14	0)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop -	Full	1280-1330 (1260-1360) 1100 1080 800 500	0 56,5-59,5 51,5-54,5	(27,5-37,5) (55,5-60,5) (57,5-59,5) (50,5-55,5)	
	Stop	1100	0		
idle stop	Full	370-420 (350-440)	0		2
End stop	Start	300 100 110-250	mind.130,0	(16,0-24,0)	

ೊgie to the stop-plate .:	Pre-setting dimensions	
Pumps $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 3^{\circ}$ $\delta = 60 + 8^{\circ}$	Primp Dimension (V = 0,5 mm) Dimension V = - mm	

F14

En

WPP 001/4 FIA 2,3 b 2

1. Edition

VA 3/110 H 1200 BL 134-4 0 460 313 012

0.7

2. Test Specifications

supersedes

company engine

Fiat 853

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches

and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

Plunger lift of 1,0 mm related to outlet "A" 1. Settings Charge-air press | Difference in delivery 1.1 Timing device travel 800 7,3-8,3 mm 12 Supply pump pressure 800 4,5-5,0 kp/cm² cm3/1000 strokes 1.3 Full-load delivery without 62,0-63,0 800 2,5 charge-air pressure Full-load delivery with charge-air cm3/1000 strokes cm3/1000 strokes 300 17,0-23,0 14 idle speed regulation 3,0 100 mind. 130,0 cm³/1000 strokes 1300 31,0-39,0 cm3/1000 strokes 16 Full-load speed regulation

Checking values in brackets

2.1 Timing device	rev/min mm	310-460(280 Start	-490)		1050~1200 13,7-14,4(13,4-14,7)
2.2 Croply pump	rev/min kp/cm ²	100	-1,6)	800 (4,3-5,2)	1200 6,3-6,8(6,1-7,0)
Overflow delivery	rev/min cm ³ /10 s			1000 55-125(40-140))
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1350-1400 (1330-1420) 1300 1200 800 500		(30,0-40,0) (59,0-64,0) (61,5-63,5) (53,0-58,0)	
	Stop	1200	0		
Idle stop	Full	370-420 (350-440) 300	0	(16,0-24,0)	
End stop	Start	100 110-230	mind.130,0	•	

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 45 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 0,5 mm Dimension V = - mm

WPP 001/4 FIA 2,3 a 4

1. Edition

VA 4/110 H 1200 BL 136 0 460 314 006 supersedes

company

Fiat

engine

854

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

Festoil-ISO 4113

0.5 mm

2. Test Specifications

Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
11	Timing device travel	800	6,8-7,8	mm		
12	Supply pump pressure	800	5,0-5,5	kp/cm ²		
1.3	Full-load delivery without charge-air pressure	800	59,5-60,5	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1 4	Idle speed regulation	340	17,0-23,0	cm ³ /1000 strokes	a	3,0
15	Start	100	mind.130,0	cm ³ /1000 strokes		
16	Full-load speed regulation	1280	27,0-35,0	cm ³ /1000 strokes		, w same necessary and a supplementary approximate of a

z. icar ob	CALLIACTUA	Checking value	3 III DI acheta		
2 1 7 Timing device	rev/min	300-450(270-	-480)	800	1000-1160
	mm	Start .		(6,5-8,1)	11,7-12,4(11,4-12,7)
2 2 Supply rump	rev/min	100)	800	1200
	kp/cm ³	1,0-1,5(0,8-	-1,7)	(4,8-5,7)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500)		1200
	cm ³ /10 s	mind. 25	5		55-125(40-140)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1330-1370 (1310-1390) 1280 1180 800 500	55,0-58,0	(26,0-36,0 (54,0-59,0 (59,0-61,0 (57,0-62,0)
	Stop	1200	0	`	
idle stop	Full	380-430 (360-450) 340	0	(16,0-24,0)
•	Start	100	mind.130,	n	
End stop		130-230			

E17

BOSCH

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Pump		Pump
T .	$= 25 \pm 4^{\circ}$	Dimension IV = 1,5 mm
β	$= 33 \pm 8^{\circ}$	Dimension V = - mm
Υ	= 30 - 8°	Dimension I = 7.0 mm
δ	= 60 + 8°	Dimension II = 12,0 mm
		Dimension III = 33,3 mm

Testoil-ISO 4113

E18

En

WPP 001/4 IHC 5,1 x

engine

2. Edition

VA 6/100 H 1350 BR 49-1

2. Test Specifications

21 Timing device | rev/min

supersedes 10.69 Company IHC D 310/36

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

700

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Education

1080-1230

Test Intructions and Test Equipment VDT-WPP 161/4 B

VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting. 0,5 mm Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
1.1	Timing device travel	700	6,8-7,8	mm		
12	Supply pump pressure	700	5,1-5,6	kp/cm²		
13	Full-load delivery without charge-air pressure	1000	68,5-69,5	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
14	Idle speed regulation	350	17 - 23	cm ³ /1000 strokes		3,0
15	Start (mech.) 196 bar	100	mind.80	cm ³ /1000 strokes		5
16	Full-load speed regulation	1430	46 - 54	cm ³ /1000 strokes		

Checking values in brackets

300-450 (270-480)

	mm	Start		(6,5-8,1)	13,7-14,4(13,4-14,7)
22 Supply pump	rev/min kp/cm ²	100 1,5-2,0(1,3	-2,2)	700 (4,9-5,8)	1350 7,4-7,9(7,2-8,1)
Overflow delivery 23 Fuel deliveries	rev/min cm ³ /10 s	500 mind. 25		1000 55-100(40-110	
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1500-1550 (1480-1570) 1430 1330 1000 500	0 63 - 66 56 - 59	(45 - 55) (62 - 67) (68 - 70) (55 - 60)	
	Stop	1350	0		
Idle stop	Full	480-540 (460-560) 350	0	(16 - 24)	
End stop	Start	100 mind.200	mind. 80,	0	

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 45 \times 8^{\circ}$ $\gamma = 30 \pm 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 3,0 mm (s.a. BMP 161/32) Dimension V = - mm

WPP 001/4 IHC 3,5 a 2

2. Edition

VA 4/100 H 1050 CR 8

supersedes

15.9.71

company engine

IHC D 206

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

Testoil-ISO 4113

0.5 mm

 $\pm 0,02(\pm 0,04)$

Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel 1.2 Supply pump pressure 1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure 1.4 Idle speed regulation 1.5 Start 1.96 bar	800 800 800 350 100	3,2-4,0 5,3-5,8 64,5-65,5 17,0-23,0 mind.85,0	mm kp/cm² cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes		2 , 5
1.6 Full-load speed regulation	1130	26,0-34,0	Citi-7 1000 Strokes		<u> </u>

2. Test Sp	ecificatio	ns Checking value	es in brackets		
21 Timing device	2.1 Timing device rev/min		200-350(170-380)		900-1050
	mm	Start		(2,9-4,3)	4,7-5,4(4,4-5,7)
22 Supply pump	rev/min	100		800	1050
	kp/cm ²	0,7-1,2(0,5	-1,4)	(5,1-6,0)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500			1050
	cm ³ /10 s	55-100(40-1	10)		55-100(40-110)
23 Fuel deliveries	<u> </u>				
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Fuil	1170-1220 (1150-1240) 1130 1030 800 500	0 68,0-71,0 59,5-62,5)	(25,0-35,0) (67,0-72,0) (64,0-66,0) (58,5-63,5)	
idle stop	Full	440-490 (420-510) 350	0	(16,0-24,0)	
•	Start	100	mind.85,0		
End stop		220-300		•	

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 35 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV Dimension V = - mm

WPP 001/4 IHC 3,9 w

6. Edition

VA 4/100 H 1150 CR 69-4 0 460 304 229

·Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes 2.80 IHC company D 239 engine

Setting in accordance with WPP 161/4 1 st. Supplement plunger lift 1.0 mm referenced to outlet "A".

Pre-stroke setting

2. Test Specifications

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ²
1.1	Timing device travel	900	3,6-4,6	mm .		
1.2	Supply pump pressure	900	5,1-5,6	kp/cm ²		
1.3	Full-load delivery without charge-air pressure	800	66,0-67,0	cm ³ /1000 strokes		2,5
14	Full-load delivery with charge-air pressure Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0
1.5	Start 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1175	46,0-54,0	cm ³ /1000 strokes		

Checking values in brackets

2. 1631 Op 2.1 Timing device	rev/min	330-480(300		600	980-1130
	mm	Start		(0,8-2,4) (3	,3-4,9)4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200	2 1)		900 1150 -5,8) 6,0-6,5(5,8-6,7)
Overflow delivery	rev/min cm ³ /10 s	1,4-1,9(1,2 500 55-100(40-1		(4,5	1150 55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1235-1285 (1215-1305) 1175 1130 800 500	0 69,0-72,0 63,0-66,0	(45,0-55,0) (68,0-73,0) (65,5-67,5) (62,0-67,0)	
	Stop	1150	0		
idie stop	Full	430-480 (410-500) 350	0	(11,0-19,0)	
	Start	100	mind. 90,	0	
End stop		220-320			

estoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions	
$Pump = 25 \pm 4^{\circ}$ $\alpha = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 2,2 mm Dimension V = 24,6 mm	

WPP 001/4 GUL 2,3 a 8

3. Edition

VA 3/100 H 1150 BR 105 0 460 303 041

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

 $\pm 0,02 (\pm 0,04)$

supersedes

8.69 company

engine

Güldner 3 L 79

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0.1 mm \pm 0.02 (\pm 0.04) 0,1

2. Test Specifications

Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

All test specifications are valid for

VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	700	5,5~6,5 mm			
1.2 Supply pump pressure	700	4,2-4,7 kp/c	cm ²		
1.3 Full-load delivery without charge-air pressure	800	5/,0-58,0	3/1000 strokes		2,5
Full-load delivery with charge-air pressure		cm ²	/1000 strokes		
1.4 idle speed regulation	250	11,0-17,0 cm ³	/1000 strokes		3,0
1.5 Start	100	mind.100,0 cm ³	/1000 strokes		
1.6 Full-load speed regulation	1220	16,0-24,0 cm ³	3/1000 strokes		

Checking values in brackets

2.1 Timing device	rev/min	330-490(300	-520)	700		1000-1130
	mm	Start	(!	5,2-6,8)	10	,7-11,5(10,4-11,8)
22 Supply pump	rev/min	100		700		1150
	kp/cm²	0,9-1,4(0,7	-1,6) (4	1,0-4,9)	5	3,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500		1000		
	cm ³ /10 s	mind.25	55.	-125(40-14	0)	
2.3 Fuel deliveries						
Speed control lever	Delivery lever	rev/min	cm ³ /1000 stroke	s		Charge-air pressure kp/cm ²
End stop	Full	1230-1290 (1210-1310)	0			
		1220 1130		(15,0-2) (59,0-6)	5,0)	
		800		(56,5-5	B,5)	
		500	47,5-50,	5 (46,5-5	1,5)	
	Stop	1150	0			
Idie stop	Full	290-340 (270-360) 250	0	(10,0-1	R (1)	
	Same	·			J,U/	
	Start	100	mind. 100)		
End stop		130-230				

Angle to th	ne stop-plate	Pre-setting dimensions
Pump α β Y δ	= 25 ± 4° = 55 ± 8° = 30 - 8° = 60 + 8°	Pump Dimension IV = 1,0 mm (s.a.BMP 161/32) Dimension V = - mm Dimension I = 7,0 mm Dimension II = 11,0 mm Dimension III = 32,8 mm

WPP 001/4 IHC 3,5 c 6

1. Edition

En

VA 4/100 H 1250 CR 68 CR 68 P

0 460 304 195 0 460 304 196

Testoil-ISO 4113

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

supersedes

company IHC engine D 206

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,5 mm \pm 0,02 (\pm 0,04) Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	800	4,2-5,2	mm		
1.2 Supply pump pressure	800	5,1-5,6	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	60,5-61,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1 4 idie speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0
15 Start (196 bar)	100	min. 90,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1300	21,0-29,0	cm ³ /1000 strokes		41

2. Test Sp	ecificatio	NS Checking value	s in brackets		
2.1 Timing device	rev/min mm	Start 180-300 1,1-2,1(0,8	400 -2,4) (3,9-5	800 1100 ,5) 6,1-7,1(5	1150-1250 5,8-7,4) (7,0-7,7) Ende
2.2 Supply pump	rev/min kp/cm ²	200 2,1-2,6(1,9		800 9-5 , 8)	1250 6,8-7,3(6,6-7,5)
Overflow delivery	rev/min cm ³ /10 s				1250 55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full.	1350-1400 1300 1100 800 600	0 50,0-63,0 53,0-56,0	(20,0-30,0) (59,0-64,0) (60,0-62,0) (52,0-57,0)	
	Stop	1250	0		
idle stop	Full	390-440 350	0	(11,0-19,0)	
	Start	100	min.90,0		
End stop	1	220-300		•	

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 3,0 mm Dimension V = 24,6 mm

WPP 001/4 IHC 3,9 c 1

2. Edition

En

VA 4/100 H 1250 CR 67-1 CR 67-1 P

0 460 304 193 0 460 304 194

Testoil-ISO 4113

supersedes 11.73 company THC

company IHC D 239 TD 8 c

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,5 mm \pm 0,02 (\pm 0,04) Plunger lift of 1,0 mm related to outlet "A"

rev/min	Settings		Charge-air press	Difference in delivery cm ³
800	4,5-5,5	mm		
800	5,2-5,7	kp/cm²		
800	69,5-70,5	cm ³ /1000 strokes	i	2,5
		cm ³ /1000 strokes		
350	12,0-18,0			3,0
100	min. 90,0			
1330	31,0-39,0			•
-	800 800 800 350 100	800 4,5-5,5 800 5,2-5,7 800 69,5-70,5 12,0-18,0 100 min. 90,0	800 4,5-5,5 mm 800 5,2-5,7 kp/cm² 800 69,5-70,5 cm³/1000 strokes cm³/1000 strokes 100 min. 90,0 cm³/1000 strokes 1330 31,0-39,0	800 4,5-5,5 mm 800 5,2-5,7 kp/cm² 800 69,5-70,5 cm³/1000 strokes cm³/1000 strokes 100 min. 90,0 cm³/1000 strokes

1,1-2,1(0,8-2,4) (4,2-5,8)6,1-7,1(5,8-7,4) (6,9-7,6) 200 800 12 2,1-2,6(1,9-2,8) (5,0-5,9) 7,0-7,5(6				ackets	values in bra	NS Checking va	ecification	Test Sp	2.
2.2 Supply pump rev/min kp/cm ² 2.1-2,6(1,9-2,8) (5,0-5,9) 7,0-7,5(6		1100-12 (6.9-7.6) E				200-300		Timing device	21
	250	1250 7,0-7,5(6,8		800		200		Supply pump	2.2
		1250 55-100(40-1						erflow delivery	Ove

23 Fu	el deliveries
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Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1370-1420 1330 1250 800 500	0 66,0-69,0 71,0-74,0	(30,0-40,0) (65,0-70,0) (69,0-71.0) (70,0-75,0)	
	Stop	1250	0		
idle stop	Full	400-450 350	0	(11,0-19,0)	
End stop	Start	100 220-300	min.90,0		·

Angle to the stop-plate	Pre-setting dimensions	
$Pump = 25 \pm 4^{\circ}$ $g = 40 \pm 8^{\circ}$ $g = 30 - 8^{\circ}$ $g = 60 \pm 3^{\circ}$	Pump Dimension IV = 1.8 mm Dimension V = 24.6 mm	

WPP 001/4 IHC 3,5 k 2. Edition

VA 4/100 H 1200 CR 12-14 Nozzle-and-holder assembly

1 688 901 020 (172 + 3 bar)

supersedes

engine

3,76

company

IHC D 239

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting

0.5 mm

± 0,04

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	800	3,2-4,2	mm ,		
1.2 Supply pump pressure	800	5,3-5,8	kp/cm ²		
1.3 Full-load delivery without charge-air pressure	800	67,5-68,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1280	31,0-39,0	cm ³ /1000 strokes		

2. Test Sp 2.1 Timing device	rev/min	200-350(170-380)	500	800	1000-1150
	mm	Start 1,3-	2,3(1,0-2,6	5)(2,9-4,5) 4	,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		800	1200
	kp/cm ²	2,2-2,7(2,0-2,9)	(5	,1-6,0) 6,7-	7,2(6,5-7,4)
Overflow delivery	rev/min	500			1200
	cm ³ /10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel	deliveries
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Speed co	ontrol lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop		Full	1320-1370 (1300-1390) 1280 1230-1250 1180 800 500	0 Start 67,5-70,5 62,0-65,0	(30,0-40,0) (66,5-71,5) (67,0-69,0) (61,0-66,0)	
		Stop	1200	0		
idie stop		Full	410-470 (390-490) 350	0	(11,0-19,0)	
End	stop	Start	100 220-300	mind.90,0		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 45 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 2,2 mm Dimension V = 24,6 mm

78

46

WPP 001/4 STE 4,0 a 2 1. Edition

n

VA 4/1000 H 1200 BR 145-1 0 460 304 103

supersedes

company

Steyr

engine

WD 440

All test specifications are valid for Bosch Fuel Injection Pump Test Benches

and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke

,3 mm

Pinger li:

1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel	800	4,8-5,8	mm .		
1.2	Supply pump pressure	800	4,6-5,1	kp/cm ²		
1.3	Full-load delivery without charge-air pressure	800	66,0-67,0	cm ³ /1000 strokes]	2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strakes		
1.4	Idle speed regulation	250	16,0-22,0	cm ³ /1000 strokes	ĺ	3,0
1.5	Start	100	mind.80,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1280	36,0-44,0	cm ³ /1000 strokes		

2.1 Timing device	rev/min	400-550(370-580)	800	1050-1180
•	mm	Start .	(4,5-6,1)	8,7-9,4(8,4-9,7)
2 Supply pump	rev/min	100	800	1200
	kp/cm ²	1,1-1,6(0,9-1,8)	(4,4-5,3)	5,9-6,4(5,7-6,6)
verflow delivery	rev/min	500		1000
Oversion desirery	cm ³ /10 s	mind. 25		55-125(40-140)

2.3	Fuel	deliv	eries
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Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ⁸
End stop	Full	1350-1410 (1330-1430) 1280 1150 800 500	0 67,5-70,5 64,0-67,0	(35,0-45,0) (66,5-71,5) (65,5-67,5) (63,0-68,0)	
	Stop	1200	0		
Idle stop	Full	320-380 (300-400) 250	0	(15,0-23,0)	
End stop	Start	100 110-210	mind. 80,0		

Testoil-ISO 4113

BOSCH

Angle to the stop-plate	Pre-setting dimensions	
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump = 3,5 mm Dimension IV = - mm	

WPP 001/4 IHC 3,9 1 2. Edition

n

estoil-ISO 4113

VA 4/100 H 1150 CR 69-5 0 460 304 238 (see VDT-WPP 161/4, Suppl. 1) supersedes 1.78 company IHC prigne D 239

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0 mm
Plunger lift of 1,0 mm related to outlet "A"

				e setting secreter.	
1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
1.1 Timing device travel	900	3,6-4,6	mm		
1.2 Supply pump pressure	900	5,1-5,6	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	66,0-67,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes	! !	3,0
15 Start 196 bar	100	mind.90,0	cm ³ /1000 strokes		-
1 6 Full-load speed regulation	1175	46,0-54,0	cm ³ /1000 strokes		

2. Test Sp		ns Checking value	es in brackets		
2 1 Timing device	rev/min	330-480(300	-510) 60	0 900	980-1130
	mm	Start	1,1-2,1(0,8-2,4)(3,3-	-4,9) 4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		900	1150
	kp/cm ²	1,4-1,9(1,2	-2,1)	(4,9-5,8)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500			1150
•	cm ³ /10 s	55-100(40-1	10)		55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1235-1285 (1215-1305) 1175 1130 800 500	0 69,0-72,0 63,0-66,0	(45,0-55,0) (68,0-73,0) (65,5-67,5) (62,0-67,0)	
	Stop	1150	0		
idle stop	Full	430-480 (410-500) 350	0	(11,0-19,0)	
	Start	100	mind. 90,0		
End stop		220-320		•	

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV= 2,2 mm Dimension V= 24,6 mm

WPP 001/4 DEE 5,0 a 2. Edition

VA 6/110 H 1100 BR 154 Nozzle-and-holder assembly 0 460 316 010

1 688 901 020 (172 + 3 bar)

supersedes company

6.70 John Deere 643

engine

Setting of the pointer at a stroke of 2,1 mm in relation to outlet "F"

Pre-stroke setting

0,4 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	800	8,7-9,7 mm		
1.2 Supply pump pressure	800	5,3-5,8 kp/cm ²		
1.3 Full-load delivery without charge-air pressure	800	67,0-68,0 cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure		cm ³ /1000 strokes		
1.4 Idle speed regulation	350	16,0-22,0 cm ³ /1000 strokes		3,0
1 5 Start	100	mind. 130,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	1150	26,0-34,0 cm ³ /1000 strokes		

2. Test Spo 2.1 Timing device 2.2 Supply pump Overflow delivery	rev/min mm rev/min kp/cm² rev/min cm³/10 s	1S Checking value 230-380(200-4 Start 100 1,0-1,5(0,8- 500 mind. 25		800 (8,4-10,0) 800 (5,1-6,0)	11,7-12,4(11 1 6,7-7,2(6,5	100 5-7,4) 000
2.3 Fuel deliveries Speed control lever	Delivery lever	rev/min	cm ³ /1000 stroi	kes	Charge-air press	ure kp/cm ³
End stop	Full	1170-1220 (1150-1240) 1150 1050 800 500	0 64,5-66, 56,0-59,	(66,5-6	7,5) 8,5)	
idle stop	Full	400-450 (380-470) 350	0	(15,0-2	23,0)	
End stop	Start	100 120-240	mind.130	,0		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 35 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV= 1,5 mm Dimension V = - mm

WPP 001/4 DEE 3,6 a

3. Edition

VA 4/110 H 1250 BR 147 0 460 314 008

supersedes

7.71

company

engine

John Deere 219 D 26 Z

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0.5 mm

Plunger lift of 1,82 mm related to outlet "D" = OT

1. Settings	rev/min	Settings		Charge-air press kp/cm ⁻	Difference in delivery cm ³
1.1 Timing device travel	800	5,8-6,8	mm		
12 Supply pump pressure	800	4,2-4,7	kp/cm²		
1.3 Full-load delivery without charge-air pressure	900	69,5-72,5	cm ³ /1000 strokes		2,5
Full-load delivery with ch pressure	arge-air		cm ³ /1000 strokes		1
1 4 Idle speed regulation	400	17,0-23,0	cm ³ /1000 strokes		3,0
1.5 Start	100	mind.90,0	cm ³ /1000 strokes		
1.6 Full-load speed regulatio	n 1290	46,0-54,0	cm ³ /1000 strokes		

2. Test Sp	ecificat	ions Checking values in brackets		
2 1 Timing device	rev/min	330-480(300-516)	800	1090-1220
	mm	Start	(5,5-7,1)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	800	1250
	kp/cm ²	0,8-1,3(0,6-1,5)	(4,0-4,9)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500		1000
	cm ³ /10 s	mind. 25		55-1250(40-140)
2.3 Fuel deliveries				

2.3	Fuel	deliverie	S
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Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1410 (1330-1430)	0	(15.0.55.0)	
		1290 1200 900	72,5-73,5	(45,0-55,0) (72,0-74,0) (69,0-73,0)	
		500	53,0-57,0	(52,0-58,0)	
	Stop	1250	0		
idie stop	Full	500-550 (480-570)	0		
		400		(16,0-24,0)	
	Start	100	mind. 90,0	•	·
End stop	Į	200-300	1		ł

Festoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions		
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 50 + 8^{\circ}$	Pump Dimension IV= 0,5 MM Dimension V= - MM		

WPP 001/4 DEE 2,5 g

2. Edition

0 460 303 121

2. Test Specifications

VA 3/100 H 1250 BR 26-3 Nozzle-and-holder assembly 1 688 901 020 (!72 + 3 bar) supersedes company

3.72 John Deere 3.164 DL 01

Setting of pointer with plunger lift 1.72 mm referenced to outlet "A" in line with TDC position of corresponding engine cylinder

engine

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

Festoil-ISO 4113

0.3mm $\pm 0.02 (\pm 0.04)$

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel	800	7,9-8,9	mm		
1.2	Supply pump pressure	800	4,4-4,9	kp/cm ²		
1.3	Full-load delivery without charge-air pressure	1150	63,0-64,0	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1.4	Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0
1.5	Start			cm ³ /1000 strokes		
1.6	Full-load speed regulation	1250	26,0-34,0	cm ³ /1000 strokes		

2. Test Sp	ecification	Checking value	s in brackets		
2.1 Timing device	rev/min	150-300(120	0-330)	800	1000-1150
	mm	Start		(7,6-9,2)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100		800	1250
	kp/cm²	1,1-1,6(0,	9-1,8)	(4,2-5,1)	6,4-6,9(6,2-7,1)
Overflow delivery	rev/min	500		1000	
•	cm ³ /10 s	mind. 25		55-125 (40-1	40)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 stroke	S	Charge-air pressure kp/cm ⁴
End stop	Full	1280-1380 (1260-1400) 1250 1150 800 500 100	0 56,5-59,5 51,0-54,0 mind.38,0	(25,0-35,0) (62,5-64,5) (55,5-60,5) (50,0-55,0)	
	Stop	1250	0		
Idle stop	Fuli	450-500 (430-520) 350	0	(11 0 10 0)	
		330		(11,0-19,0)	
•	Start				
End stop					

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV 2,5 mm Dimension V - mm	,

WPP 001/4 DEE 3,3 b

3. Edition

VA 4/100 H 1200 BR 30

Nozzle-and-holder assembly 1.688 901 020 (172 + 3 bar)

supersedes company

12.68 John Deere

engine.

Plunger lift 1.72 mm referenced to outlet "D" in line with engine TDC position.

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers

X 22

Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

estoil-ISO 4113

0,3 mm

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel	700	5,8-6,8	mm		
1.2	Supply pump pressure	700	4,1-4,6	kp/cm ²		
1.3	Full-load delivery without	1100	50,5-51,5	cm ³ /1000 strokes		2,5
	charge-air pressure Full-load delivery with charge-air			cm ³ /1000 strokes		
14	pressure Idle speed regulation	400	9,0-15,0	cm ⁹ /1000 strokes		3,0
1.5	Start			cm ³ /1000 strokes	l l	
1.6	Full-load speed regulation	1270	26,0-34,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value	s in brackets		
2.1 Timing device	rev/min	170-330(140-	360)	700	1060-1220
	mm			(5,7-7,1)	11,7-12,4(11,4-12,7)
22 Supply pump	rev/min	100		700	1200
	kp/cm ²	1,2-1,7(1,0-	1,9)	(3,9-4,8)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500		1000	
	cm ³ /10 s	mind. 25		55-125(40-14	0)
2.3 Fuel deliveries		`			
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ^{\$}
End stop	Full	1310-1360 (1290-1380) 1360 1270 1180 1100	0 max. 5,0 47,5-50,5 mind.33,0	(25,0-35,0) (46,5-51,5) (50,0-52,0)	
	Stop	1200	0		
ldle stop	Full	490-550 (470-570) 400	0	(8,0-16,0)	
End stop	Start				

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Angle to the	e stop-plate	Pre-setting dimensions
Pump a ß Y ð	= 25 ± 4° = 33 ± 8° = 30 - 8° = 60 ± 8°	Pump Dimension IV = - mm Dimension V = - mm Dimension III= 34,4mm

WPP 001/4 DEE 3,3 d

3. Edition

800

VA 4/100 H 1250 BR 27

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes 6.70

company engine

John Deere X 22

1090-1240

Setting of pointer with plunger lift 1.72 mm referenced to outlet "D" in line with TDC position of corresponding engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

cylinder

Pre-stroke setting

2.1 Timing device rev/min

0,3

2. Test Specifications Checking values in brackets

170-330 (140-360)

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel	800	6,5-7,5	mm		
1.2	Supply pump pressure	500	3,2-3,7	kp/cm ²		
	Full-load delivery without	1150	63,0-64,0	cm ³ /1000 strokes		2,5
	charge-air pressure Full-load delivery with charge-air			cm ³ /1000 strokes		
1.4	pressure Idle speed regulation	400	9,0-15,0	cm ³ /1000 strokes	10 de	3,0
	Start			cm ³ /1000 strokes		
	Full-load speed regulation	1330	31,0-39,0	cm ³ /1000 strokes		

2.1 Tilling device		170-330 (14	0.3007	000	1030 1240
	mm	Start		(6,2-7,8)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100		500	1250
	kp/cm²	1,1-1,6(0,9	-1,8)	(3,0-3,9)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500			
	cm ³ /10 s	mind. 25			
2.3 Fuel deliveries					•
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1370-1580	0		
		(1350-1600)	6 O		
		1430 1330	max. 6,0	(30,0-40,0)	
		1230	57,5-62,5		
		1150		(62,5-64,5)	
		800	57,5-60,5	(56,5-61,5)	
		100	mind. 38,0		
		4050			
	Stop	1250	0		
		550-600	0		
Idle stop	Full	(530-620)	0		
		400		(8,0-16,0)	
••	Start		-		
End stop					

Angle to the stop-plate	Pre-setting dimensions		
Pump a = 25 ± 4° b = 35 ± 8° v = 30 - 8° b = 60 ± 8°	Pump Dimension IV = 2,0 mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 12,0 mm Dimension III = 33.8 mm		

Nozzle-and-holder assembly 1.688 901 020 (172 + 3 bar) supersedes

company

John Deere

engine

49 F

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Plunger lift 1.72 mm referenced to outlet "A" in line with engine TDC position.

Pre-stroke setting

estoil-ISO 4113

0,3 mm

2. Test Specifications

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	700	6,3-7,3	mm .		
1.2 Supply pump pressure	700	4,5-5,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1000	59,5-60,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1.4 Idle speed regulation	400	9,0-15,0	cm ³ /1000 strokes		3,0
1.5 Start			cm ³ /1000 strokes		
1 6 Full-load speed regulation	1250	27,0-33,0	cm ³ /1000 strokes		

Checking values in brackets

2. 1631 Sp	Contoation	the Checking value	2 III DI GCKCI2		
2.1 Timing device	rev/min	100-310(70-	340)	700	970-1130
	mm	Start		(6,0-7,6)	9,7-10,4(9,4-10,7)
22 Supply pump	rev/min	100		700	1150
2 5 Juppiy bamb	kp/cm²	1,5-2,0 (1,	3-2,2)	(4,3-5,2)	6,1-6,6(5,9-6,8)
		500	.	1000	
Overflow delivery	rev/min cm ³ /10 s	mind. 25		55-125(40 -	-140)
	Cit / tos	111111111111111111111111111111111111111			
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 stroke	s	Charge-air pressure kp/cm ²
End stop	Full	1270-1325 (1250-1345) 1250 1130 1000 500 100	0 54,0-57,5 44,0-48,0 mind.35,0	(26,0-34, (53,5-58, (59,0-61, (43,0-49,	,5) ,0)
	Stop	1150	0		
idle stop	Full	520-580 (500-600) 400	0	(8,0-16,	0)
***	Start		-		
End stop	ŀ		-		

F23

BOSCH

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = - mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 12,0 mm Dimension III = 28,3 mm

WPP 001/4 IHC 3,9 h

2. Edition

En

VA 4/100 H 1250 CR 89-1 0 460 304 226 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

supersedes

company IHC D 239

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting

0,5 mm

2. Test Specifications

± 0,04

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	sev/min	Settings		Charge-air press. kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	800	4,5-5,5	mm		
1.2 Supply pump pressure	800	5,2-5,7	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	67,5-68,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1 4 idle speed regulation	400	8,0-14,0	cm ³ /1000 strokes		3,0
1:5 Start 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1320	31,0-39,0	cm ³ /1000 strokes		

Checking values in brackets

2 1 Timing device	rev/min mm	Start 200-320(170- 1,1-2,1(0,8-	360) 40 2,4) (4,2-5	00 800 5,8)6,1-7,1(5,	1000 1100-1250 ,8-7,4)6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	200		800	1250
	kp/cm²	2,0-2,6(1,9-	2,8)	(5,0-5,9)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min cm ³ /10 s	500 55-100(40-11	0)		1250 55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1380-1430 (1360-1450) 1320 1260-1280 1220 800 500	Start 63,5-66,5 68,5-71,5	(30,0-40,0) (62,5-67,5) (67,0-69,0) (67,5-72,5)	
	Stop	1250	0		
Idle stop	Full .	450-500 (430-520) 400	0	(7,0-15,0)	
	Start	100	mind.90,0		
End stop		220-320			

Testoil-ISO 4113

BOSCH

Angulo en la placa de tope	Cotas para ajuste previo
Bomba $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Bornba Cota IV = 2,6 mm Cota V = 24,6 mm

WPP 001/4 IHC 3,9 h 1

1. Edition

0 460 304 218

VA 4/ 100 H 1250 CR 89 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

supersedes

engine:

IHC company D 239 -

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches

and Testers

Test Intructions and Test Equipment

Charge-air pressure kp/cm8

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

0,5 mm

1.	Settings	rev/min	Settings		Charge-air press	Difference in delivery cm ³
1.1	Timing device travel	800	4,5-5,5	mm		
1.2	Supply pump pressure	800	5,2-5,7	kp/cm ²		
1.3	Full-load delivery without charge-air pressure	800	69,5-70,5	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air			cm ³ /1000 strokes	į	
14	pressure Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0
1.5	Start	100	mind.90,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1330	31,0-39,0	cm ³ /1000 strokes	1	•

2. Test Sp	ecificati	ONS Checking values in bracket	s	
2.1 Timing device	rev/min	Start 200 220/470 200	400 000	4000 4400 4070
	mm	200-330(170-360) 1,1-2,1(0,8-2,4) (4	400 800 1,2-5,8)6,1-7,1(5	1000 1100-1250 5,8-7,4)6,9-3,6(6,6-7,9)
2.2 Supply pump	rev/min	200	800	1250
	kp/cm ²	21,-2,6(1,9-2,8)	(5,0-5,9)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min cm ³ /10 s	500 55-100(40-110)		1250 55-100(40-110)

23 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	
End stop	Full	1330-1420 (1310-1440)		_

	Stop	(1310-1440) 1330 1280-1300 1250 800 500	Start 66,0-69,0 ⁻ 71,0-74,0	(30,0-40,0) (65,0-70,0) (69,0-71,0) (70,0-75,0)	
ldie stop	Full	400-450 (380-470) 350	0	(11,0-19,0)	•
End stop	Start	100 220-320	mind.90,0		

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 1,8 mm Dimension V = 24,6 mm

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WPP 001/4 IIIC 5,8f 1

4. Edition

VA 4/110 H 1150 CR 85

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

supersedes 12.76

company IHC engine D 246

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

2. Test Specifications Checking values in brackets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

clasion to outlet A .

and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B

VDT

Pre-setting see reverse side

Testoil-ISO 4113

0,4 mm ± 0,04

1. Settings	rev/min	Settings	Charge-air pre	Difference in delivery
Timing device travel Supply pump pressure	700	3,6-4,6 mm		
	700	4,8-5,3 kp/cm ²		
1.3 Full-load delivery without charge-air pressure	800	74,5-75,5 cm ³ /1000s	strokes	2,5
Full-load delivery with charge-air pressure		cm ³ /1000 s	strokes	2,5
1.4 Idle speed regulation	370	12,0-18,0 cm ³ /1000s	strokes	3,0
1.5 Start	100	mind.100,0 cm ³ /1000s	strokes	3,0
1.6 Full-load speed regulation	1220	31,0-39,0 cm ³ /1000s	strokes	

2.1 Timing device	rev/min	Start			
	mm	200-350(170 1,5-2,5(1,2	-380) 400 -2,8) (3,3-4	700 ,9)4,5-5,5(4,	900 880-1050 2-5,8)5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min	200			
	kp/cm ²	2,3-2,8(2,1	-3,0)	(4,6-5,5)	1150 6,4-6,9(6,2-7,1)
Overflow delivery	rev/min	500			1150
	cm ³ /10 s	55-100(40-1	10)		55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ⁸
End stop	Full	1250-1300 (1230-1320) 1220 1160-1180 1120 800 500	0 Start 75,0-78,0 65,5-68,5	(30,0-40,0) (74,0-79,0) (74,0-76,0) (64,5-69,5)	
	Stop	1150	0-		
Idle stop	Full	420-500 (400-520)			

End stop

Start

mind.100,0

(11,0-19,0)

370

100

220-320

Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 3,00 mm Dimension V = 24,65 mm	

WPP 001/4 IHC 5,1 h

2. Edition

0 460 306 152

VA 6/100 H 1050 CR 78 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

5.12 supersedes IHC company D 310 engine:

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Pre-stroke setting

estoil-ISO 4113

0,3 ± 0,04 Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

				e setting see reven	
1. Settings	rev/min	Sett ngs		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	800	2,1-2,9	mm		
1.2 Supply pump pressure	800	4,5-5,0	kp/cm ²		
1.3 Full-load delivery without charge-air pressure	800	60,0-61,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air		** e= c	cm ³ /1000 strokes		
pressure 1.4 Idle speed regulation	400	7,0-13,0	cm ³ /1000 strokes		3,0
1.5 Start 196 bar	100	mind.85,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1120	11,0-19,0	cm ³ /1000 strokes		

2.1 Timing device	rev/min	480-600(450-	630)		800	920-1050
	mm	Start	•	(1,8	- 3,2)	3,4-4,1 (3,1-4,4)
2.2 Supply pump	rev/min	200			800	1050
	kp/cm²	1,3-1,8(1,1-	2,0)	(4,3	- 5,2)	5,5-6,0(5,3-6,2)
Overflow delivery	rev/min cm ³ /10 s	500 55 - 100 (40	-110)			1050 55 - 100 (40 - 110)
2.3 Fuel deliveries						•
Speed control lever	Delivery lever	rev/min	cm ³ /1000 stroke:	s		Charge-air pressure kp/cm ⁹
End stop	Full	1150-1200 (1130-1220) 1120 1020	0 60,0-63,0		(10,0-20,	,0)
		800 500	56,5-59,5		(59,5-61; (55,5-60;	,5) ,5)
	Stop	1050	0			
Idle stop	Full	480-530 (460-550) 400	0		(6,0-14,0	o) ,
End stop	Start	100 220-300	mind. 85	,0		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $V = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 3,5 mm Dimension V = 24,6 mm

0

G8

En

WPP 001/4 STE 2,3 c

2. Edition

VA 3/90 H 1200 BR 143 0 460 393 004

Steyr WD 307 engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All text specifications are valid for Bosci Fuel Injection Pump Test Benches and Testers Test Inti uctions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

0,3 mm Pre-stroke setting Plunger lift of 1,0 mm related to outlet "A"

2. Test Specifications Checking values in brackets

rev/min mm

1. Settings	rev/min	Settings		Charge-or press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel			mm		
1 2 Supply pump pressure	1200	6,3-6,8	kp/cm²	,	
1.3 Full-load delivery without charge-air pressure	800	54,0-55,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1 4 Idle speed regulation	250	13,0-19,0	cm ³ /1000 strokes		3,0
1 5 Start	100	mind.70,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1300	17,0-25,0	cm ³ /1000 strokes		

2.2 Supply pump	rev/min	100			1200
	kp/cm ²	1,0-1,5(0,8-	1,7)		6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500			1000
	cm ³ /10 s	mind. 25			55-125(40-140)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1220-1380 (1300-1400)	0		
		1370	< 5,0		
		1300 1180	53 5-56 E	(16,0-26,0) (52,5-57,5)	
		800	35,5-30,5	(53,5-55,5)	
		500	56,0-59,0	(55,0-60,0)	
	Stop	1200	0		
idle stop	Full	340-410			
		(320-430) 250		(12,0-20,0)	
		. = 33		(,,)	

2.1 Timing device

End stop

Start

mind. 70,0

100

110-210

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 45 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension (V = - MM) Dimension V = - MM)

WPP 001/4 STE 2,3 c 2

1. Edition

VA 4/90 H 1200 BR 144 0 460 394 004

supersedes

company Steyr

engine

WD 407

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

0,3 _{mm} Pre-stroke setting

2. Test Specifications

Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel			mm		
1.2	Supply pump pressure	1000	5,3-5,8	kp/cm²		
1.3	Full-load delivery without	900	53,0-54,0	cm ³ /1000 strokes		2,5
	charge-air pressure Full-load delivery with charge-air			cm ³ /1000 strokes		
1.4	pressure Idle speed regulation	250	14,5-20,5	cm ³ /1000 strokes	٠.	3,0
15	Start	100	mind.76,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1270	21,0-29,0	cm ³ /1000 strokes		

Checking values in brackets

2.1 Timing device	rev/min				
	mm				
2.2 Supply pump	rev/min	100		1000	1
	kp/cm [®]	0,8-1,3(0,6-	1,5)	(5,1-6,0)	
Overflow delivery	rev/min	500			1000
	cm ³ /10 s	mind. 25			55-125(40-140)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm 1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1310-1350 (1290-1370)	0	/22 2 22 2)	
		1270 1150	55,5-58,5	(20,0-30,0) (54,5-59,5) (52,5-54,5) (50,5-55,5)	
		900		(52,5-54,5)	
·		500	51,5-54,5	(50,5-55,5)	
		1200	0		
	Stop				
idle stop	Full	330-380 (310-400)	0		
		250		(13,5-21,5)	
· ·		100 ∘	mind. 76,0		
End stop	Start	110-210			

Angle to the stop-plate	Pre-setting dimension		
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $V = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = - mm Dimension V = - mm		

WPP 001/4 IHC 2,4 a

estoil-ISO 4113

VA 3/100 H 950 BR 9

Nozzle-and-holder assembly

1 688 901 020 (172 + 3 bar)

4.69 supersedes IHC company XDD 155

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B

 $0.3 \, \text{mm} \pm 0.02 \, (\pm 0.04)$ Pre-stroke setting

Pre-setting see reverse side

1. Settings	rea/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	500	7,1-8,1	mm		
1.2 Supply pump pressure	500	5,0-5,5	kp/gra²		
1.3 Full-load delivery without charge-air pressure	700	58,5-59,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1.4 Idle speed regulation	400	15,0-21,0	cm ³ /1000 strokes		3,0
1.5 Start 196 bar	100 `	mind.90,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1000	36,0-44,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value	es in brackets			
2.1 Timing device	rev/min	120-270 (90-	300)	500		700-850
	mm	Start		(6,8-8,4)	12,	,7-13,4(12,4-13,7)
2.2 Supply pump	rev/min	100		500		950
2.2 Supply pump	kp/cm²	2,2-2,7(2,0-	2,9)	(4,8-5,7)	7.	,0-7,5(6,8-7,7)
		500				950
Overflow delivery	rev/min	mind. 27	,		c	
	cm ³ /10 s	mind. 27				5-125(40-135)
2.3 Fuel deliveries						
Speed control lever	Delivery lever	rev/min	cm ³ /1000 stroke	S		Charge-air pressure kp/cm ²
End stop	Full	1020-1070 (1000-1090) 1000 930 700 500	0 62,5-65,6 53,0-56,0	(35,0-45 (61,5-66 (58,0-60 (52,0-57	(5,5) (1,0)	
	Stop	950	0			
ldie stop	Full	460-510 (440-530)	0	/44 0 55		
		400		(14,0-22	(0,	
	Start	100	mind.90,	0		
End stop	Jan	500 mind.180		0 (33,0-49	,0)	·

Angle to the stop-plate		Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$,	Pump Dimension IV = 2,0 mm Dimension V = - mm
		•

G14

Test Specifications Distributor-Type WPP 001/4 IHC 2,4 c 2. Edition **Fuel Injection Pump**

VA 3/100 H 1250 BR 9-1

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

6.69 supersedes IHC **company** D 155 engine

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

Pre-stroke setting

 $0,3 \text{ mm} \pm 0,02 (\pm 0,04)$

VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery
1.1 Timing device travel	900	6,8-7,8	mm .		
1.2 Supply pump pressure	900	4,7-5,2	kp/cm ²		
1.3 Full-load delivery without charge-air pressure	1000	65,0-66,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5	cm ³ /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1330	32,0-40,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value	s in brackets		
2.1 Timing device	rev/min	350-500 (320	-530)	900	1120-1250
	mm	Start	(6,	,5-8,1)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100		900	1250
	kp/cm²	0,8-1,3(0,6-	1,5) (4,	,5-5,4)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500		1000	1250
	cm ³ /10 s	mind. 27	55-1	25(40-135)	55-125(40-135)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1380-1430 (1360-1450) 1330 1230 1000 500	0 61,0-64,0 54,5-57,5	(64.5-66.5)	
	Stop	1250	0		
idle stop	Full	340-390 (320-410) 300	0	(8,5-16,5)	
End stop	Start	100 500 mind.150	mind.90,0 max. 50,0		

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Angle to the stop plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 56 \pm 8^{\circ}$ $Y = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 1,5 mm Dimension V = - mm

G16

En



WPP 001/4 THC 2,9 b

3. Edition

VA 3/100 H 1050 BR 112

Nozzle-and-holder assembly

supersedes

4.69

1'688 901 020 (172 + 3 bar)

company engine

D 179

IHC

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting

0,3 mm

2. Test Specifications

All test specifications are valid for Sosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air-press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	600	7,8-8,8	mm		
1.2 Supply pump pressure	600	4,5-5,0	kp/cm ²		
1.3 Full-load delivery without charge-air pressure	800	70,5-71,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1.4 Idle speed regulation	490	17,0-23,0	cm ³ /1000 strokes		3,0
1.5 Start (mech.) 196bar	100	mind.90,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1150	26,0-34,0	cm ³ /1000 strokes		

Checking values in brackets

2.1 Timing device	rev/min	180-330(150-		600	840-1000
	mm	Start		(7,5-9,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100)	600	1050
	kp/cm²	1,2-1,7(1,0-	-1,9)	(4,3-5,2)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500)		1000
	cm ³ /10 s	mind.2	25		55-125(40-140)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 stroke	es	Charge-air pressure kp/cm ²
End stop	Full	1170-1250 (1150-1270) 1210 1150 1030 800 500	0 < 3,0 73,0-76,0 65,5-69,5	(70,0-72,0)	
	Stop	1000	U		
Idle stop	Fuli	440~500 (420-520) 400	0 mind.90,0		
End stop	Start	500 mind.150	max. 60,0)	

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Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 0,5 mm (see BMP) Dimension V = - mm	

WPP 001/4 IHC 3,9 b 3 1. Edition

VA 4/100 H 1250 BR 63-1

supersedes

company

IHC

engine

D 239

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting $0.5\,$ mm Plunger lift of 1.0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
	Timing device travel Supply pump pressure	800	8,8-9,8	mm kp/cm ²		
	Full-load delivery without charge-air pressure	800 800	4,9-5,4 69,5-70,5	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ ∄1000 strokes		
14	Idle speed regulation	350	11,0-17,0	cm ³ /1000 strokes		3,0
15	Start 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1300	44,0-52,0	cm ³ /1000 strokes	The Company of the second of the company of the com	

2. Test Sp	ecificati	ONS Checking values in brackets		
2.1 Timing device	rev/min	200-350(170-380)	800	1050-1200
	mm	Start	(8,5-10,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1250
-7. 7.	kp/cm ²	1,3-1,8(1,1-2,0)	(4,7-5,6)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500	1000	
	cm ³ /10 s	mind.25	55-125(40-14	0)
2.3 Fuel deliveries	<u> </u>			

2.3 Fuel deliveries	2.3	Fuel	deliveries
---------------------	-----	------	------------

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1400 (1330-1420)	0		
	1	1300		(43,0-53,0)	
		1300	Start		
	1	1200	66,5-69,5	(65,5-70,5)	
		800		(69,0-71,0)	
		500	67,5~70,5	(66,5-71,5)	
	Stop	1250	0		
idle stop	Full	390-440	0		
		(370-460) 350		(10,0-18,0)	
	Start	100	mind.90,0	(04.0.00.0)	
End ston		500	35,0-65,0	(34,0-66,0)	

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Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 0,5 mm Dimension V = - mm	

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WPP 001/4 IHC 3,9 b 2 1. Edition

VA 4/100 H 1250 BR 63

supersedes

company

IHC

engine

D 239

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0.5 mm

Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm'	Difference in delivery
1 1	Timing device travel	800	8,8-9,8	mm		
1.2	Supply pump pressure	800	4,9-5,4	kp/cm²		
1.3	Full-load delivery without charge-air pressure	800	66,6-67,5	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		ł
1 4	Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0
1.5	Start 196 bar	100	mind.90,0	cm ³ /1000 strakes		
16	Full-load speed regulation	1350	28,5-36,5	cm ³ /1000 strokes		

2. Test Sp	ecificati	ONS Checking values in bracket	S	
2 1 Timing device	rev/min	200-350(170-380)	800	1050-1200
	¦mm 	Start	(8,5-10,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/can	100	800	1250
	kp/cm ²	1,3-1,8(1,1-2,0)	(8,6-10,0)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500	1000	
•	cm ³ /10 s	mind.25	55-125(40-140)	

22	Fugl	dali	veries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1350-1400 (1330-1420)	0	(07 5 07 5)	
		1330 1200 800	61,0-64,0	(27,5-37,5) (60,0-65,0) (66,0-68,0)	
		500	63,5-66,5	(62,5-67,5)	
	Stop	1250	0		
Idle stop	Full	390-440 (370-460)	0		
		350		(11,0-19,0)	
	Start	100 500	mird.90,0 max.35,0-60	,0	
End stop		mind.180		•	

Testoil-ISO 4113

G21

BOSCH

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Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension IV = 0,5 mm Dimension V = - mm	

WPP 001/4 IHC 2,9 c 2

1. Edition

600

(5.6-7.2)

En

VA 3/100 H 1100 BR 62

2. Test Specifications

rev/min

2.1 Timing device

Pre-stroke setting

supersedes

IHC D 179

company

engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

900-1030

11,7-12,4(11,4-12,7)

VDT-WPP 161/4 B Pre-setting see reverse side

0.3 Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge air press kp/cm	Difference in delivery cm ³
11	Timing device travel	600	5,9-6,9	mm		
12	Supply pump pressure	600	3,9-4,4	kp/cm²		
1.3	Full-load delivery without charge-air pressure	800	63,5-64,6	cm ³ /1000 strokes		2,5
	Full-load delivery with Charge-air pressure			cm ³ /1000 strokes		
14	Idle speed regulation	375	12,0-18,0	cm ³ /1000 strokes		3,0
1.5	start (mech.) 196 bar	100	mind.90,0	cm ³ /1000 strokes		
16	Full-load speed regulation	1200	21,0-29,0	cm ³ /1000 strokes		

Checking values in brackets

120-270(90-300)

Start

	mm	Start		(3,0-7,2)	119/-1294(1194-129//
2.2 Supply pump	rev/min	100	>	600	1100
	kp/cm [®]	0,8-1,5(0,6-	-1,5)		6,1-6,6(5,9-6,8)
Overflow delivery	rev/min cm ³ /10 s	500 mind.25	5	1000 55-125(40-	-140)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 stroke	S	Charge-air pressure kp/cm ²
End stop	Full	1210-1270 (1190-1290) 1200 1100 800 500	0 66,5-69,5 65,0-68,0	(63,0-6	0,5) 5,0)
	Stop	1100	0		
Idle stop	Full	440-520 (420-540)	0	(44.0.44	
End stop	Start	375 100 500 mind. 150	mind.90,0 35,0-57,0		

Testoil-ISO 4113

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 55 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension iv 7 0,5 mm (see BMP Dimension V = - mm 161/32)
	·

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 2,9 c

2. Edition

En

VA 3/100 H 1200 BR 61

supersedes

10.69

company engine

IHC D 179

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

0,3 mm Pre-stroke setting Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	800	8,8-9,8	mm		
1.2 Supply pump pressure	800	5,0-5,5	kp/cm ²		
1 3 Full-load delivery without charge-air pressure	800	67,0-68,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		ł
1.4 Idle speed regulation	375	12,0-18,0	cm ³ /1000 strokes		3,0
15 Start (mech.) 196 bar	100	mind.90,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1300	31,0-39,0	cm ³ /1000 strokes		

2.1 Timing device	rev/min mm	170-320(140-350) Start	800 (8,5-10,1)	1050-1200 13,7-14,4(13,4-14,7)
.2 Supply pump	rev/min kp/cm ³	100	800	1200
Overflow delivery	rev/min cm ³ /10 s	1,0-1,5(0,8-1,7) 500 mind.25	(4,8-5,7) 1000 <u>55-125(40-14</u>	6,7-7,2(6,5-7,4)

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop	Full	1350-1360 (1330-1380)	0		,
		1300 1150 800	72,0-75,0	(30,0-40,0) (71,0-76,0) (66,5-68,5)	
		500	63,5-66,5	(62,5-67,5)	
	Stop	1200	0		
Idle stop	Full	440-520 (420-540)	0		
		375		(11,0-19,0)	
End stop	Start	100 500 mind.150	mind.90,0 max. 35,0-	62,5	·

Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 50 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump = 0,5 mm (see BMP 161/32) Dimension V = mm	

Prüfwerte Verteiler-Einspritzpumpen

WPP 001/4 IHC 3,9 d 2. Ausgabe

De

VA 4/100 H 1250 BR 60 0 460 304 102

ersetzt Firma:

12.70

Motor:

IHC D 239

Düsenhalterkombination 1 688 901 020 (172 + 3 bar)

Samtliche Prufwerte gelten nur für BOSCH-Einspritzpumpen-Prufstande und Prüfgerate Prüfanleitung und Prüfausrüstung VDT-WPP 161/4

Voreinstellung siehe Ruckseite

 0.5_{mm} Vorhub-Einstellung

Kolbenhub 1,0 mm bezogen auf Auslaß "A"

1. Einstellwerte	Drehzahl min 1	Einstellwerte	Ladedruck bar (kp/cm²)	Mengenunterschied cm ³
1 1 Spritzverstellerweg	700	8,5-9,5 mm		
1.2 Förderpumpendruck	700	4,6-5,1 bar (kp/cm²)	ľ	
1.3 Vollastmenge ohne Ladedruck	900	71,5-72,5 cm ³ /1000 Hu	be	2,5
Vollastmenge mit Ladedruck		cm ³ /1000 Hu	be	
1.4 Leerlauf-Abregelung	400	19,5-25,5 cm ^{3/1000} Hü	be	3,0
1.5 Start (mech.) 196 bar	100	mind.90,0 cm ^{3/1000} Hu	be	
1.6 End-Abregelung	1300	41,0-49,0 cm ^{3/1000} Hu	be	

2. Prüfwer	te Überprüfwe	erte in Klammern			
2.1 Spritz- versteller	min-1	150-300 (120)-330)	700	950-1100
	mm	Beginn		(8,2-9,8)	13,7-14,4(13,4-14,7)
2.2 Förder- pumpe	min-1	100		700	1250
	bar (kp/cm²)	1,5-2,0(1,3-	-2,2)	(4,4-5,3)	6,1-6,6(5,9-6,8)
	min-1	500	1000		
	cm ³ /10s	mind. 25		55-125(40-140)
2.3 Fördermengen	<u> </u>				·
Drehzahlhebel	Mengenhebel	Drehzahl min-1	Fördermenge cm ³ /1000 Hübe		Ladedruck bar (kp/cm²)
Endanschlag	Voll	1330-1390	0		

Drehzahlhebel	Mengenhebel	Drehzahl min-1	Fördermenge cm ³ /1000 Hube		Ladedruck bar (kp/cm²)
Endanschlag	Voll	1330-1390 (1310-1410) 1300 1200 900 500	0 69,5-72,5 66,5-69,5	(40,0-50,0) (68,5-73,5) (71,0-73,0) (65,5-70,5)	
	Stop	1250	0		
Leerlaufanschlag	Voll	480-540 (460-560) 400	0 0	(18,5-26,5)	
Endanschlag	Start	100 500 mind. 25	mind.90,0 max. 35,0-6	5,0	

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WPP 001/4 IHC 5,8 v 1

1. Edition

En

VA 6/100 H 1450 BR 59 0 460 306 093

supersedes

company

IHC

engine

D 358

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,4 mm

Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
1 2 1.3	Timing device travel Supply pump pressure Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure idle speed regulation Start	900 900 1100 500 100	8,6-9,6 5,4-5,9 75,5-76,5 9,5-15,5 mind.80,0	mm kp/cm² cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes		
16	Full-load speed regulation	1550	24,0-32,0	cm ³ /1000 strokes		

.1 Timing device	rev/min mm	250-400 (220-430) Start	900 (8,3-9,9)	1200-1330 13,7-14,4(13,4-14,7)
2 Supply pump	rev/min	100	900	1450
	kp/cm ²	1,3-1,8(1,1-2,0)	(5,2-6,1)	7,2-7,7(7,0-7,9)
Overflow delivery	rev/min	500	1500	
	cm ³ /10 s	mind. 25	55-125(40-14	10) ·

Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
Full	1630-1740 (1610-1760) 1630 1550 1420 1100 500	0 < 10,0 68,5-71,5 62,5-66,5	(23,0-33,0) (67,5-72,5) (75,0-77,0) (61,5-67,5)	
Stop	1450	0		
Full	590-680 (570-700) 500 100	0 mind.80,0	(8,5-16,5)	
	Full	Full 1630-1740 (1610-1760) 1630 1550 1420 1100 500 Full 590-680 (570-700) 500 100	Full 1630-1740 0 (1610-1760) 1630 1550 1420 68,5-71,5 1100 500 62,5-66,5 Stop 1450 0 Full 590-680 0 0 (570-700) 500 mind.80,0	Full 1630-1740 (1610-1760) 1630 (23,0-33,0) 1420 1550 (75,0-77,0) 62,5-66,5 (61,5-67,5) Stop 1450 0 Full 590-680 0 (570-700) 500 (8,5-16,5)

Festoil-ISO 4113

BOSCH

Angl	e to the stop-plate	Pre-setting dimensions
Pun	p	Pump
α	= 25 ± 4°	Dimension IV = - TITT
β	= 45 ± 8°	Dimension V = - mm
Y	= 30 - 8°	
δ	$=60 \pm 8^{\circ}$	
ł		1

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 4,0 a 1 2. Edition

Fn

VA 4/100 H 1200 CR 145-1 0 460 304 144

2. Test Specifications

supersedes

7.71

company engine

Steyr WD 410

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

Alt test specifications are valid for Bosch Fuel Injection Pump Test Beaches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,3 mm \pm 0,02 (\pm 0,04) Plunger lift of 1,0 mm related to outlet "A"

Charge-air press Difference in delivery rev/min 1. Settings kp/cm 800 2,6-3,4 mm 1.1 Timing device travel 12 Supply pump pressure 800 4,3-4,8 kp/cm² cm^S/1000 strokes 700 69.5-71.5 1.3 Full-load delivery without 2,5 charge-air pressure cm3/1000 strokes Full-load delivery with charge-air 250 16.0-22.0 cm³/1000 strokes 3.0 1.4 Idle speed regulation 100 mind.80,0 cm³/1000 strokes 1.5 Start 1280 36,0-44,0 cm³/1000 strokes 1.6 Full-load speed regulation

Checking values in brackets

2.1 Timing device	rev/min	330-550(300-580) Start (800	1070-1200
	mm			(2,3-3,7)	4,3-5,0(4,0-5,3)
2.2 Supply pump	rev/min	200		800	1200
	kp/cm ²	1,4-1,9(1,2-	2,1)	(4,1-5,0)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500			1200
	cm ³ /10 s	55-100(40-11	0)		55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ⁻
End stop	Full	1350-1400 (1330-1380) 1280 1150 700 500	70,0-72,0 67,0-70,0	(69,0-72,0)	
	Stop	1200	0		
idle stop	Full	310-400 (290-420) 250	0	(15,0-23,0)	-
End stop	Start	100 150-250	mind.80,0	•	·

Pre-setting dimensions

Dimension IV = 2,5 mm Dimension V = 24,6 mm

Pump

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Angle to the stop-plate

= 25 ± 4°

= 40 ± 8° = 30 - 8° = 60 + 8°

Pump

WPP 001/4 IHC 3,9 a 2. Edition

VA 4/10 H 1100 CR 187/2 CR 187/2 P

0 460 304 244

Nozzle-and-holder assembly

supersedes 5.80

1 688 901 020 (172 + 3 bar)

company IHC D₂₃₉ engine

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

Pre-setting see reverse side

VDT-WPP 161/4 B

Pre-stroke setting

estoil-ISO 4113

0.5 mm ± 0.02 (± 0.04)

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	900	3,9-4,7	mm .		
1.2 Supply pump pressure	900	4,9-5,4	kp/cm ²		
1.3 Full-load delivery without charge-air pressure	800	73,0-74,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0
1.5 Start	100	mind.85,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1170	31,0-39,0	cm ³ /1000 strokes		

2. Test Sp	ecificati	ons Checki	ng values in brackets				
2.1 Timing device	rev/min	1	500	900			
	mm	Start	1,1-2,1(0,8-2,4)	(3,6-5,0)			
2.2 Supply ours		20	200		1100		
z.z Supply pullip	2.2 Supply pump rev/min kp/cm ²	1,4-1,9	1,4-1,9(1,2-2,1)		5,7-6,2(5,5-6,4)		
Overflow delivery rev/min		50	500		1100		
Overflow delivery	cm ³ /10 s	55-100(4	55-100(40-110)		55-100(40-110)		

2.3 Fuel deliveries

2.3 Fuel deliveries					
Speed control tever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ⁴
Encistop .	Full	1200-1250 (1180-1270) 1170 1080 800 500	0 70,25-72,75 71,0-73,0 0	(30,0-40,0) (69,25-73,25 (72,5-74,5) (70,0-74,0)	
idle stop	Full Start	400-450 (380-470) 350 100 260-360	0 mind.85,0	(11,0-19,0)	·

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 2,00 mm Dimension V = 24,65 mm

H10

En

WPP 001/4 IHC 3,5 c 7

1. Edition

En

VA 4/100 H 1250 CR 68-1 P 0 460 304 231

supersedes

company IHC

engine D 206

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,5 mm \pm 0,02 (\pm 0,04) Plunger lift of 1,0 mm related to outle+ "A"

1. Settings	rev/min	Serii. js	Charge-air press kp/cm²	Difference in delivery cm ³
1.1 Timing device travel	800	4,2-5,2 mm		
1.2 Supply pump pressure	800	5,3-5,8 kp/cm²		
1.3 Full-load delivery without charge-air pressure	800 9	55,5-56,5 cm ³ /1000 stro	ces	2,5
Full-toad delivery with charge-air pressure		cm ³ /1000 stro	es	
1.4 Idie speed regulation	350	12,0-18,0 cm ³ /1000 stro	es	3,0
1.5 Start (196 bar)	100	min.90,0 cm ³ /1000 stro	es	
1.6 Full-load speed regulation	1300	31,0-39,0 cm ³ /1000 stro	res ·	

2. Test Sp	ecificatio	NS Checking values in brai	ckets			
21 Timing device	rev/min	Start 170-320	400	800	1000	1100-1250
22 Supply pump	rev/min	1,2-2,2(0,9-2,5)	(3,9-5,5) 800	5,7-6,	7(5,4-7,0)	Ende(7,0-7,7) 1250
Overflow delivery	rev/min cm ³ /10 s	2,1-2,6(1,9-2,8)	(5,1-6,0))		7,6(6,9-7,8) 1250 100(40-110)

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1260-1280 1200 800 500	Start 51,0-54,0 48,0-51,0	(50,0-55,0) (55,0-57,0) (47,0-52,0)	
	Stop	1250	0		
Idle stop	Full	420-470 350	0 12,0-18,0	(11,0-19,0)	

Testoil-ISO 4113

HII

BOSCH

End stop

Start

min. 90,0

100

220-320

Pre-setting dimensions		
Pump		
Dimension IV = 3.0 mm		
Dimension V = 24,65 mm		
· ·		

46

WPP 001/4 IHC 2,9 b 1

3. Edition

VA 3/100 H 1050 CR 11-1 (see VDT-WPP 161/4, Suppl. 1)

2. Test Specifications

rev/min

2.1 Timing device

supersedes 7.73 IHC

engine D 179 tractor 523

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

850-1000

VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0 mm Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
11	Timing device travel	700	3,3-4,1	mm		
12	Supply pump pressure	700	4,5-5,0	kp/cm ²		
1.3	Full-load delivery without charge-air pressure	800	65,0-61,0	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
14	idle speed regulation	400	12,0-18,0	cm ³ /1000 strokes		3,0
1.5	Start :	100	mind.90,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1100	41,0-49,0	cm ³ /1000 strokes		

500

700

Checking values in brackets

250-400(220-430)

		• • • • • • • • • • • • • • • • • • • •	Start	1,1-2,1(0	3,8-2,4)(3,0-4	4,4)5,2-5,9(4,9-6,2)
	2.2 Supply pump	rev/min	200)	700	1050
		kp/cm ²	2,0-2,5(1,8	-2,3)	(4,3-5,2)	5,8-6,3(5,6-6,5)
	Overflow delivery	rev/min	500)		1050
		cm ³ /10 s	55-100(40-1	10)		55-100(40-110)
	23 Fuel deliveries					
	Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge air pressure kp/cm²
9	End stop	Full	1140-1200 (1120-1220)	0		
			1100		(40,0-50,0)	
			1050-1070 1000	Start 71,0-74,0	(70,0-75,0)	
			800		(61,5-64,5) (60,0-65,0)	
			500	61,0-64,0	(60,0-65,0)	
		Stop	1050	0		
	idle stop	Full	470-550	0		
			(450-570) 400		(11,0-19,0)	
			·		(11,0 15,0)	
	· .	Start	100	mind.90,0		,
	End stop		220-300		•	

Festoil-ISO 4113

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Angle to the stop-plate	Pre-setting dimensions
Pump $a = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$	Pump Dimension IV= 4,2 mm Dimension V = 24,6 mm
$= 60 \pm 8^{\circ}$	

46

WPP 001/4 HAN 3,1 1. Edition

n

VA 6/100 H 1300 CR 54-2 0 460 306 115

supersedes

company

Hanomag

engine

D 161 R-75 PS

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting mm

1.	Settings	rev/min	Settings		Charge air press kp/cm	Difference in delivery cm ³
11	Timing device travel	1000	1,6-2,4	mm		
12	Supply pump pressure	1000	4,6-5,1	kp/cm²		
	Full-load delivery without	1100	50,5-51,5	cm ³ /1000 sïrokes		
1	charge-air pressure Full-load delivery with charge-air			cm ³ /1000 strokes		
1 '	pressure Idle speed regulation	300	12,0-18,0	cm ³ /1000 strokes	! 	
15	Start	100	mind.65,0	cm ³ /1000 strokes		
16	Full-load speed regulation	1400	31,0-39,0	cm ³ /1000 strokes		

2. Test Sp		NS Checking value		1000	4000 4450
2.1 Timing device	rev/min	620-770(590-	800)	1000	1020-1170
	mm	Start _		(1,3-2,7)	2,5-3,2(2,2-3,5)
2.2 Supply pump	řev/min	100		1000	1300 ,
	kp/cm ²	0,8-1,3(0,6-	1,5	(4,4-5,3)	5,6-6,1(5,4-6,3)
Overflow delivery	rev/min	500			1300
Overnow desceny	cm ³ /10 s	55-100(40-11	0)	55-100(40-110)	
2.3 Fuel deliveries	<u> </u>				
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm/
End stop	Full	1450-1500 (1430-1520) 1400 1300 1100 500	0 50,5-53,5 48,5-51,5	(50.0-52.0)	
	Stop	1300	0		
idle stop	Full	400-450 (380-470) 300	0	(11,0-19,0)	
-	Start	100	mind.65,0		
End Stop		mind.150			

Testoil-ISO 4113

	11/11/ 031
Angle to the stop-plate	Pre-setting dimensions
Pump	Pump
$\alpha = 25 \pm 4^{\circ}$	Dimension IV = - IIII
$^{\beta}$ = 40 ± 8°	Dimension V = - mm
^Y = 30 - 8°	
δ = 60 + 8°	

H16

Eπ

WPP 001/4 HAN 3,1 d 5 1. Edition

VA 4/100 H 1300 CR 53 0 460 304 145

2. Test Specifications

Pre-stroke setting

supersedes

company

Hanomag

engine

D 142 R 8/6

Nozzle-and-holder assembly

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment **VDT-WPP 161/4 B**

Pre-setting see reverse side

1 688 901 020 (172 + 3 bar)

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³	
11	Timing device travel	1100	2,5-3,3	mm			
1.2	Supply pump pressure	1100	4,8-5,3	kp/cm ²	,		
1.3	Full-load delivery without charge-air pressure	1100	47,5-48,5	cm ³ /1000 strokes		2,5	
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		1	
14	Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0	
15	Start	100	mind.75,0	cm ³ /1000 strokes			
16	Full-load speed regulation	1400	36,0-44,0	cm ³ /1000 strokes			

Checking values in brackets

21 Timing device	rev/min	600-750(570-	-780)	1100	1150-1270
	mm	Start		(2,2-3,6)	3,4-4,1(3,1-4,4)
2.2 Supply pump	מות (ev	200		1100	1300
	kp/c n ³	1,1-1,6(0,9	-1,8)	(4,6-5,5)	5,3-5,8(5,1-6,0)
Overflow delivery	re://min	500			1300
	cm ³ /10 s	55-100(40-11	0)		55-100(40-110)
23 Fuel deli reries			•		
Special control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1500-1600 (1480-1520)	0		
		1400 1300 1100	46,0-49,0	(35,0-45,0) (45,0-50,0) (47,0-49,0)	
		600	49,0-53,0	(48,0-54,0)	
	Stop	1300	0	·	
Idle stop	Full	500-580 (480-600)	0	/// 0 // 2	
		350		(11,0-19,0)	
•	Start	100	mind.75,0		
End stop		150-250			

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Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = mm Dimension V = mm	

WPP 001/4 SAV 2,5 a 1

2. Edition

VA 3/100 H 1250 CR 152 0 460 303 102

supersedes 11.73

Saviem 714-30-01

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment **VDT-WPP 161/4 B**

Pre-setting see reverse side

Pre-stroke setting

 $0.4 \text{ mm} \pm 0.02(\pm 0.04)$

1.	Settings	rev/min	Settings		Charge-air press	Difference in delivery cm ³
1.1	Timing device travel	1000	3,2-4,0	mm		
12	Supply pump pressure	1000	5,3-5,8	kp/cm²		
	Full-load delivery without	900	56,5-57,5	cm ³ /1000 strokes		2,5
	charge-air pressure Full-load delivery with charge-air			cm ³ /1000 strokes		
14	pressure Idie speed regulation	300	7,0-13,0	cm ³ /1000 strokes		3,0
	Start (autom ₂)	100	mind.80,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1300	33,5-41,5	cm ³ /1000 strokes	l	

2 1 Timing device	rev/min	ns Checking value 450-600(420-	630)	1000	1150-1300
Ū	rnm	Start		(2,9-4,3)	5,2-5,9(4,9-6,2)
		200		1000	1250
2.2 Supply pump	rev/min kp/cm ^g	1,5-2,0(1,3-	2,2)	(5,1-6,0)	6,2-6,7(6,0-6,9)
	Призи	500			1250
Overflow delivery	rev/min cm ³ /10 s	55-100(40-11	0)		55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1380-1430 (1360-1450) 1300 1250-1280 1230 900 500	0 Start 58,0-61,0 52,0-55,0	(32,5-42,5) (57,0-62,0) (56,0-58,0) (51,0-56,0)	
	Stop	1250	0		
idle stop	Full	340-410 (320-430) 300	0	(6,0-14,0)	
	Start	100	mind.80,0		
End stop		110-210		•	

Testoil-ISO 4113

	SAV 2,5 a 1	-2-
Angle to the stop-plate	Pre-setting dimensions	
Pump $a = 25 \pm 4^{\circ}$ $b = 45 \pm 8^{\circ}$ $b = 30 - 8^{\circ}$ $b = 60 + 8^{\circ}$	Pump Dimension IV = 4,0 mm Dimension V = 25,0 mm	

H20

En

WPP 001/4 MWM 2,5 c

1. Edition

VA 3/100 H 1150 BR 66 0 460 303 111

company

engine

MWM D 935-L3

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Sosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment #DT-WPP 161/4 B

Pre-setting see reverse side

0,4 mm Pre-stroke setting Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
11	Timing device travel	800	6,2-7,2	mm		,
1.2	Supply pump pressure	800	5,1-5,6	kp/cm ²		
1.3	Full-load delivery without charge-air pressure	900	60,0-61,0	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air oressure			cm ³ /1000 strokes		<u> </u>
14	Idle speed regulation	250	10,0-16,0	cm ³ /1000 strokes		3,0
15	Start	100	mind.80,0	cm ³ /1000 strokes		<u> </u>
1.6	Full-load speed regulation	1250	< 7,5	cm ³ /1000 strokes		

2. Test Sp			ets	
2.1 Timing device	rev/min	300-450(270-480)	800	930-1050
	mm	Start	(5,9-7,5)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	800	1150
	kp/cm ²	1,7-2,2(1,5-2,4)	(4,9-5,8)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500	1000	
	cm ³ /10 s	mind.25	55-125(40-140)	

Overnou delivery	1007/11/11/1			
	cm ³ /10 s	mind.25	55-125(40-140)	
23 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm/
End stop	Full	1220-1270 (1200-1290) 1250 1160-1180 1130 900 500	0 max. 7,5 Start 58,5-61,5 (57,5-62,5 (59,5-61,5 53,0-56,0 (52,0-57,0	5)
	Stop	1150	0	·
ldle stop	Full	360-420 (340-440) 250	0 (9,0-17,0)	
	Start	100 500	mind.80,0 30,0-54.0 (29.0-55.0	,

End stop

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mind.150

	1 mi 2,3 C
Angle to the stop plate	Pre-setting dimensions
Pump $^{\alpha} = 25 \pm 4^{\circ}$ $^{\beta} = 50 \pm 8^{\circ}$ $^{\gamma} = 30 - 8^{\circ}$ $= 60 \pm 8^{\circ}$	Pump Dimension IV = 4,0 mm Dimension V = - mm

WPP 001/4 GUL 3,1 a 3

1. Edition

VA 4/100 H 1000 BR 112 0 460 303 052

supersedes

Guldner .

4 L 79

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

0,1 _{mm} Pre-stroke setting Plunger lift of 1,0 mm related to outlet "A"

1.	Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1	Timing device travel	700	6,2-7,2	mm		
12	Supply pump pressure	700	4,0-4,5	kp/cm ²		
13	Full-load delivery without charge-air pressure	700	50,0-51,0	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
14	Idle speed regulation	250	7,0-13,0	cm ³ /1000 strokes		3,0
1.5	Start	100	mind.110,0	cm ³ /1000 strokes		
16	Full-load speed regulation	1040	16,0-24,0	cm ³ /1000 strokes		

2.1 Timing device	rev/min	280-430(250-460)	700	830-970
	mm	Start	(5,9-7,5)	8,7-9,4(8,4-9,7)
2 2 Supply pump	rev/min	100	700	1000
	kp/cm [®]	0,8-1,3(0,6-1,5)	(3,8-4,7)	5,1-5,6(4,9-5,8)
Overflow delivery	rev/min	500	1000	
	cm ³ /10 s	mind. 25	55-125(40-140)	

	cm ³ /10 s	mind. 25	55	-125(40-140)	
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm/
End stop	Full	1030-1080 (1010-1100) 1040 990-1020 980 700 500	0 Start 54,5-57,5 42,5-45,5	(15,0-25,0) (53,5-58,5) (49,5-51,5) (41,5-46,5)	
Idle stop	Full	280-340 (260-360) 250	0	(6,0-14,0)	
End stop	Start	100 120-220	mind.110,0	•	·

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = - mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 9,0 mm Dimension III = 30,8 mm

Festoil-ISO 4113

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 6,0 g 2. Edition

VA 6/100 H 1300 CR 153 0 460 306 127

Pre-stroke setting

supersedes 3.72

company

engine

Steyr WD 610.01

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

 $0,1_{mm} \pm 0.02 (\pm 0.04)$

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	700	2,4-3,4	mm		
1.2 Supply pump pressure	700	4,0-4,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1300	60,5-61,5	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1.4 Idle speed regulation	350	7,0-13,0	cm ³ /1000 strokes		3,0
15 Start (autom.)	100	mind.85,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1450	26,0-34,0	cm ³ /1000 strokes		

2. Test Sp	ecificatio	NS Checking value	es in brackets		
2.1 Timing device	rev/min	250-400(220-	430)	700	900-1050
	mm	Start		(2,1-3,7)	4,3-5,0(4,0-5,3)
2.2 Supply pump	rev/min	200		700	1300
	kp/cm ⁸	1,4-1,9(1,2-	2,1)	(3,8-4,7)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500			1300
-	cm ³ /10 s	55-100(40-11	0)		55-100(40-110)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1500-1560 (1480-1580) 1450 1300 1000 500	0 60,0-62,0 60,5-64,5	(25,0-35,0) (60,0-62,0) (59,0-63,0) (59,5-65,5)	
	Stop	1300	0		
Idle stop	Full	450-520 (430-540) 350	0	(6,0-14,0)	
End stop	Start	100 110-220	mind.85,0		

Angle to the stop-plate	Pre-setting dimensions
Pump a = 25 ± 4° b = 55 ± 8° r = 30 - 8° = 60 + 8°	Pump Dimension IV = 1,00 mm Dimension V = 24,60 mm

WPP 001/4 STE 2.0 a 1

2. Edition

VA 2/100 H 1100 CR 156 0 460-302 007

supersedes 11.73

Steyr company

WD 210.40 engine

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

 $0.3^{mm} \pm 0.02 (\pm 0.04)$

4 0-44		landa -	10.0			
1. Settin	gs	rev/min	Settings		Charge-air press	Difference in delivery cm ³
1.1 Timing devic	e travel	800	3,0-4,0	mm		
1.2 Supply pump	pressure	800	4,4-4,9	kp/cm²		
1.3 Full-load deli charge-air pr		1050	60,5-61,5	cm ³ /1000 strokes		2.5
Full-load deli pressure	very with charge-air			cm ³ /1000 strokes		2,5
1.4 Idle speed re	gulation	250	13,0-19,0	cm ³ /1000 strokes		3,0
	tom.)	100	mind.90,0	cm ³ /1000 strokes		3,0
1.6 Full-load spe	ed regulation	1250	11,0-19,0	cm ³ /1000 strokes		

					
2. Test Sp	ecificatio	ns Checking valu	es in brackets		
2.1 Timing device	rev/min	350-500(320-530)		800	880-1030
	mm .	Start		(2,7-4,3)	4,2-4,9(3,9-5,2)
22 Supply pump	rev/min	200		800	1100
	kp/cm ²	1,4-1,9(1,2-	2,1)		5,5-6,0(5,3-6,2)
Overflow delivery	rev/min	500	•	(' 32 ' 31 ' 7	1100
	cm ³ /10 s	55-100(40-11	0)		
23 Fuel deliveries		100(10)			55-100(40-110)
•					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	s	Charge-air pressure kp/cm²
End stop	Full	1270-1320 (1250-1340) 1250 1050 900 500	60,0-62,0	(10,0-20,0) (60,0-62,0) (59,0-63,0) (64,5-69,5)	
	Stop	1100	0		
Idle stop	Full	300-370 (280-390)	0		
		250		(12,0-20,0)	
End stop	Start	100 120-220	mind.90,0	•	

Pre-setting dimensions	
Pump Dimension IV = 4,0 mm Dimension V = 24,6 mm	
	Pump Dimension IV = 4,0 mm

46

WPP 001/4 FIA 1,9c 1

2. Edition

VA 4/90 H 1900 CR 157-1 0 460 394 017 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

supersedes 7.73

·)

Fiat

company engine

237 AZ

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting

 $0.3 \text{ mm} \pm 0.02 (\pm 0.04)$

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	1500	5,1-6,1	mm		
1 2 Supply pump pressure	1500	6,0-6,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air			cm ³ /1000 strokes		
pressure 1.4 Idle speed regulation	300	12,0-18,0	cm ³ /1000 strokes	<u> </u>	3,0
15 Start (autom.)	100	mind.65,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1950	16,0-24,0	cm ³ /1000 strokes		

2. Test Specifications Checking values in brackets 400-550(370-580) 1500 1650-1800 rev/min 2.1 Timing device (4,8-6,4)Start 6,1-6,8(5,8-7,1)200 1500 1900 2.2 Supply pump 1,1-1,6(0,9-1,8)(5,8-6,7)7,1-1,7(6,9-7,8) kp/cm² 500 1900 Overflow delivery rev/min 55-100(40-110) 55-100(40-110) cm³/10 s

2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ²
End stop .	Full .	2100-2220 (2080-2240) 1950 1800 1500 500	31,5-34,5	(15,0-25,0) (30,5-35,5) (32,5-34,5) (28,0-33,0)	*
	Stop	1900	0		
Idle stop	Full	440-520 (420-540) 300	0	(11,0-19,0)	
End stop	Start	100 200-300	mind.65,0		·

Festoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 3,0 mm Dimension V = 24,6 mm

J6

WPP 001/4 HAN 4,7 a 2

1. Edition

En

0 460 306 135

VA 6/100 H 1700 CR 151-2. Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar) supersedes

company engine

Hanomag D 162 L

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting

Festoil-ISO 4113

0.3m

 $\pm 0.02(\pm 0.04)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches

Test Intructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

1.	Settings	rey/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
11	Timing device travel	1300	4,7-5,5	mm		
1.2	Supply pump pressure	1300	5,9-6,4	kp/cm ²		
1.3	Full-load delivery without charge-air pressure	1000	54,0-55,0	cm ³ /1000 strokes		2,5
	Full-load delivery with charge-air pressure		~-	cm ³ /1000 strokes		
1.4	Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes		3,0
1.5	Start	100	mind.65,0	cm ³ /1000 strokes		
1.6	Full-load speed regulation	1800	32,0-38,0	cm ³ /1000 strokes		

2. Test Sp 2.1 Timing device	rev/min	550-700(520) - 730)	1300	1530-1680
	mm	Start		(4,4-5,8)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	100)	1300	1700
	kp/cm²	0,4-1,0(0,2	2-1,2)	(5,7-6,6)	7,2-7,7(7,0-7,9)
Overflow delivery	rev/min	500)		1700
Overnow denvery	cm ³ /10 s	55-100(40-1	10)		55-100(40-110)
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm ⁵
End sup	Fult	1880-1960 (1860-1980 1800 1700 1000 500)	(31,0-39,0) (53,0-58,0) (53,5-55,5) (48,0-54,0)	
	Stop	1700	0		
Idle stop	Full	500-600 (480-620) 350	0	(11,0-19,0)	
End stop	Start	100 200-300	mind.65,0	(11,0010)	-

	11/11 +37 a E	
Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 50 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 4,0 mm Dimension V = 24,6 mm	

WPP 001/4 HAN 4,7 a 1

3. Edition

1300

VA 6/100 H 1700 CR 151 0 460 306 113

2. Test Specifications

rev/min

2.1 Timing device

7.71 supersedes Hanomag company

D 162 L

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

1530-1680

VDT-WPP 161/4 B

Pre-setting see reverse side

0,3 mm $\pm 0,02 (\pm 0,04)$ Pre-stroke setting Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm ³
1.1 Timing device travel	1300	4,7-5,5	mm		
1.2 Supply pump pressure	1300	5,9-6,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1000	54,0-55,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm ³ /1000 strokes	:	3,0
1.5 Start	100	mind.65,0	cm ³ /1000 strokes		
1.6 Full-load speed regulation	1800	31,0-39,0	cm ³ /1000 strokes		

Checking values in brackets

550-700(520-730)

	mm	Start		(4,4-5,8)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	100		1300	1700
	kp/cm ²	0,4-0,9(0,2-	1,1)	(5,7-6,6)	7,2-7,7(7,0-7,9)
Overflow delivery	rev/min	500			1700
Oversiow delivery	cm ³ /10 s	55-100(40-11	0)		55-100(40-110)
23 Fuel deliveries		,			
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge air pressure kp/cm²
End stop	Full .	1880-1960 (1860-1980)	0	(20.0.40.0)	
		1800 1700 1000		(30,0-40,0) (53,0-58,0) (53,5-55,5)	
		500	49,0-53,0	(48,0-54,0)	
	Stop	1700	0		
Idle stop	Full	500-600 (480-620)	0		
		. 350		(11,0-19,0)	
	Start	100	mind.		

estoil-ISO 4113

J9

End stop

200-300

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Angle to the stop-plate	Pre-setting dimensions
Pump $a = 25 \pm 4^{\circ}$ $\beta = 50 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 4.0 mm Dimension V = 24.6 mm

WPP 001/4 STE 6,0 g 1

2. Edition En

VA 6/100 H 1100 CR 150 0 460 306 126

supersedes

11.73

company

Steyr

engine

WD 610.42

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers

Test intructions and Test Equipment VDT-WPP 161/4 8

Pre-setting see reverse side

Pre-stroke setting

0,3 mm $\pm 0,02$ ($\pm 0,04$)

1. Settings	rev/min	Settings		Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	800	2,9-3,7	mm		
1 2 Supply pump pressure	800	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	53,0-54,0	cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure			cm ³ /1000 strokes		
1.4 Idle speed regulation	280	15,0-21,0	cm ³ /1000 strokes	<u> </u>	3,0
15 Start (autom.)	100	mind.80,0	cm ³ /1000 strokes		
1 6 Full-load speed regulation	1190	21,0-29,0	cm ³ /1000 strokes		

2. Test Sp	ecificat	ONS Checking values in brackets		
2.1 Timing device	rev/min	350-480(320-510)	800	930-1080
	mm	Start	(2,6-4,0)	4,3-5,0(4,0-5,3)
2.2 Supply pump	rev/min	200	800	1100
	kp/cm ²	1,7-2,2(1,5-2,4)	(4,7-5,6)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500		1100
	cm ³ /10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliver	ries
------------------	------

	Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes		Charge-air pressure kp/cm²
	End stop	Full	1250-1310 (1230-1330) 1190 1050 800 500	54,0-56,0	(20,0-30,0) (53,0-57,0) (52,5-54,5) (53,0-58,0)	·
		Stop	1		,	
-	ldle stop	Full	360-420 (340-440) 280	0	(14,0-22,0)	
	- End stop	Start	100 150-250	mind.80,0		·

J11

Angle to the stop-plate	Pre-setting dimensions	
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 55 \pm 8^{\circ}$ $\gamma = 30 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = 2,8 mm Dimension V = 24,6 mm	

Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 EIC 5,9c 2. Edition

En

PES 6 A 80 D 320 RS 1280

RSV 300-1150 A0B 2003 R

supersedes

4.80

company

Eicher

engine

EDK6-7 Turbo 98 kW (133 PS)

1 - 5 - 3 - 6 - 2 - 4 je 60°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(2,10-2,30)

Port closing at prestroke

Festoil-ISO 4113

2.15-2.25

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivary cm ³ /100 strokes 3	cm ⁹ /		Fuel delivery cm ² /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1130	10,6+0,7	6,4 - 6,5	0,2(0,35)			
300	6,7-6,9	0,8 - 1,4	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

	r rated speed Control rod travel mm		interme	diate rated	speed	Control- lever deflection in degrees		rated speed Control rod travel mm		rque control Control rod travel mm
loose ca. 54	800 X 1170-1 1235-1	0,3-1,0 = 6,0 180=9,7 265=4,0	-	∞	-	ca.29	300 100 300 430-490 600	6,3 min.19,0 6,7-6,9 = 2,0 max. 1,0	1130 450 350	10,6-10,7 10,6-10,8 11,8-12,4

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational- speed limitat	speed limitar Characteristics			uel delivery 5	4a Idle stop	
Test oil to rev/min 1	cm\$/1000 strokes	Note changed to) rev/min	rev/min	cm³/1000 strakes	rev/min	cm³/1000 strokes	rev/min 8	Control rod travel mm
LDA	0,7 bar							
1130	65,0-66,0 (63,5-67,5)	1170-1180*			100	17,2-17,8 mm RW	300	6,8

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

J13

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

1130

rev/min decreasing pressure - in bar gauge pressure

EIC 5,9 c

-2-

113	
04	
Si-IS	
Testo	

Pump/governor	Setting	Measurement	diminution Control rod travel- difference		
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .		
DEC 6 A DC 4000			0.4.0.2		
PES 6 ARS 1280	0		8,1 - 8,2		
withAOB 2003 R		0,7	10,6 - 10,7		
		0,15	9,9 - 10,0		
		0,09	8,8 - 9,1		

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 v 7

2. Edition

Eπ

PES 6 A 90 D 410 RS 2596

RSV 350-1400 AOB 1141 L

supersedes

5.81

company

Daimler-Benz OM 352 A

engine

123 kW (168 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(1,95-2,15) 2,00-2,10

Port closing at prestroke

mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ² /100 strokes 3	Difference . cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ⁹ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,4+0,1	7,9 - 8,0	0,3(0,45)			
350	8,6-8,8	1,5 - 2,1	0,2(0,4)			
600 500	12,4+0,2 11,4+0,1	c,Sp. 4 u. 5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever detiection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control Control rod travel mm 11
loose	800 X =	0,3-1,0 5,75	-	-	-	ca.27	350 350	4,0 10,2-10,4	-	-
ca.70	1440-14 1535-16 1680= 0			,			710-770	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b F	ill-load stop	6 Rotational- speed limitat 3a Fuel delivery characteristics			Starting fuel delivery 5 4a idle stop			
Test oil to	emp. 40°C (104°F) cm7/1000 strokes 2	Note. changed to) rev/min 3	rey/min	cm ³ /1000 strokes	rev/min	cm³/1000 strokes	rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 78,5 - 79,5 (76,5 - 81,5)	1440-1450*	LDA LDA 500	0,7 bar 67,0 - 69,0 (65,0 - 71,0) 0 bar 50,5 - 53,5 (48,5 - 55,5	100	79,25-89,25 bei 16,4 - 16,8 mmRW		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.81

D. Adjustment Test for Manifold Pressure Compensator

Testoil-ISO 4113

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

MB 5,7 v 7 diminution 1 travel-2-

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6ARS2596	0,7		12,4 - 12,5
with AOB 1141 L	0		11,4 - 11,5
c	0,33		12,2 - 12,3
	0,15		11,6 - 11,8

Notes.

(1) when n =

revimin and gauge pressure

bar (- maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at

0.45 - 0.55 bar

Unlocking at

0.25 - 0.35 bar

Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 DAF 8,3 k 1

2. Edition

En

PE 6 A 95 D 410 RS 2525, X, Y RSV 250-1200 A 5 B 2013 DL Cold start test on EP/RSV governor according to Service Information

supersedes

8.80 DAF

company engine

DN825 (X, Y)

DHR

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

Festoil-ISO 4113

(1,95-2,15) 2,00-2,10 RW9

mm (from BDC)

Port closing difference between control-rod travel 9 and max. 3-4°

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ⁹ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	12,6+0,1	10,8 - 11,0	0,3(0,6)			
250	5,9-6,1	0,8 - 1,0	0,3(0,5)			
600	11,2+0,1	C, Sp. 4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

Degree of	r rated speed Control rod travel		Interme	diate rated	speed	Control-	Lower	rated speed Control rod travel	3 To	rque control Control rod travel
deflection of control lever	mm 2	mm rev/min	4	5	6	lever deflection in degrees 7	rev/min 8	mm 9	rev/min	mm 11
loose	800	0,3-1,0	-	-	-	ca.16	250	5,5	1000	12,6+0,1
	X =	3,0	1				100	min.19	400	12,6+0,2
ca.50	1230-12	40=11,6	1				250	5,9-6,1	300	12,8+0,4
(28)	1275-13	305=4 , 0					585-645	= 2,0	:	
	1450=0,	3-1,/					725	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	Speed mindal Characteristics				Starting fuel delivery 5 4a idle stop			
rev/min	emp. 40°C (104°F) cm ³ /1000 strokes 2	Note: changed to .) rev/min 3	rev/min	cm\$1000 strokes	rev/min	cm#1000 strokes	rev/min	Control rod travel mm	
LDA 1000	0,7 bar 106,5-108,5 (104,5-110,5)	1230-1240*	,	0 bar 77,5-80,5 (75,5-82,5)	100	19,0-21,0 mm RW	250	6,1	
X 1000	90,5- 92,5	(12,0mmRW)	X 600	77,0-80,0					
1000	99,0-101,0	(12,5mmRW)	600	77,0~80,0					

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. € 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

D. Adjustment Test for Manifold Pressure Compensator

rev/min decreasing pressure – in bar gauge pressure Testain = DAF 8,3 k 1 -2-Control rod travel-difference Pump/governor Setting Measurement Gauge pressure = Gauge pressure = bar bar mm (1) 12,6 - 12,7 12,2 - 12,3 11,5 - 11,8 11,2 - 11,3 2525 with 2013 DL 0,7 0,27 0,23

Notes.

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 EIC 2,9 a

3. Edition

PES 3 A 80 D 320 RS 1288

RSV 300-1075 A 1 B 722 DR (1) RSV 300-1075 A 1 B 753 DR (2) supersedes 4.80 company Eicher

engine

EDK 3-7 (1) EDK 3-4 (2)

38 kW (52 PS) (1) 31 kW (42 PS) (2)

A. Fuel Injection Pump Settings

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Port closing at prestroke

1 - 3 - 2 je 120°

(2,10-2,30) (2,15-2,25)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery (1) cm³/100 strokes	Difference cm²/ 100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1050	9,4-9,5	5,3-5,4	0,2(0,35)	8,2-8,3	4,2 - 4,3	n = 1050
300 800/500	7,4-7,6	1,1-1,5 C, Sp. 4-5	0,2(0,3) 0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) RSV-722 DR

										1131 /22 011
1 Uppe	r rated speed	-	Intermed	diate rated	speed	4		rated speed	(3) To	rque control
Degree of deflection	Control rod travel	Control rod travel	:			Control- lever		Control rod travel		Control rod travel
of control	mm	mm rev/min				deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.29	300	5,5	1050	9,4-9,5
	X =	5,5		•			100	min.19,0	685	9,5-9,7
ca.60	1090-1	100 = 8,4	ļ				300	5,9-6,1	500	9,8-9,9
(2a)	1110-1	140 = 4,0 $0,3 - 1,7$:	370-430	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational- speed limitat	11.00	uel delivery paracteristics I	Starting lidle	uel delivery 5	4a) idi	e stop Control rod
rev/min 1	cm ³ /1000 strokes 2	changed to) rev/min 3	rev/min	cm ³ /1000 strokes 5	rev/min	cm ³ /1000 strokes 7	rev/min 8	travel mm 9
1050	54,0-55,0 (52,5-56,5)	1090-1100*	800 500	48,5-50,5 (47,0-52,0) 47,5-49,5 (46,0-51,0)	100	109,5- 119,5	300	7,5

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

(2) RSV-753 DR EIC 2,9 a -2-

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	fiate rated		Control- lever deflection in degrees 7		rated speed Control rod travel mm	O	rque control Control rod travel mm 11 + 0,1
loose		0,3-1,0 4,5	-	•	-	ca.27	300 100	5,5 min.19,0	1050 905	8,2 8,5
ca.58	1105-	1100 = 7,2 1135 = 4,0 = 0,3 -1,7					300 379 -	5,9-6,1 430 =2,0	500	8,8

C. Settings for Fuel Injection Pump with Fitted Governor

	ell-load stop	6 Rotational- speed limitat.		3a Fuel delivery characteristics		fuel delivery 5	idle stop	
rev/min 1	cm ³ /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min	cm ³ /1000 strokes 7	rev/min 8	travel mm
1050	43,0-44,0 (42,0-45,0)	1090-1100*	900 600	43,5-46,5 (42,5-47,5) 40,5-42,5 (39,5-43,5)	100	109,5- 119,5	300	7,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Testatn =

rev/min decreasing pressure - in bar gauge pressure

1

Notes:

En

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

20

Test Specifications Fuel Injection Pumps (1A and Governors

WPP 001/4 EIC 2,9 a 1 3. Edition

Eη

PES 3 A 80 D 320 RS 1288 2 RSV 300-1000A1B 2084 R (1) RSV 300-1000A1B 2084 (2) 1288

supersed∈5 8.80 company

1 - 3 - 2

Eicher EDK 3 (1) engine

 $0-120-240^{\circ} + 0,50^{\circ}(0,75)$

EDK 3-8 u. EDK 3-9

All test specifications are valid for Bosch Fuel Injection Pump Test Beaches and Testers

37 kW(50 PS) (1) 31 kW(42 PS) (2)

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,10-2,30)

mm (from BDC)

Testoil-ISO 4113

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm ³ /100 strokes	cm ³ / 100 strokes 4	mmi 2	cm ⁹ /100 strokes 3	mm 6
980	9,3-9,4	5,5-5,6	0,2(0,35)	8,5-8,6	4,3-4,4	n = 980
300	6,9-7,1	1,0-1,4	0,2(0,3)	7,4-7,6	1,1-1,7	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

97"

1 Uppe	r rated speed		Intermediate rated speed			Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm 9	rev/min	Control rod travel mm 11
loose	800	0,3-1,0	-	•	-	ca.13	300	6,5	980	9,3-9,4
ca.40	1025-1	= 1,0 030 = 8,3 055 = 4,0 0,3-1,7						6,9-7,1 min.19,0 max. 1,0 = 2,0	770 500	9,3-9,5 9,5-9,6

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	III-load stop emp. 40°C (104°F)	Rotational- speed limitat. Note changed to .)		el delivery aracteristics	Starting fidle "	uel delivery 5		e stop Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
980	55,5-56,5 (53,5.58,0)	1020-1030*			100	109,5 - 116,5	300	7,0

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

(1) Uppe	r rated speed	Interme	Intermediate rated speed				rated speed	3 Torque control		
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- leuer deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel rmm
loose	800 x	0,3-1,0 2,25	-		<u>.</u>	ca.17	300 300	7,0 7,4-7,6	1000 820	8,5-8,6 8,8-9,0
ca.44	1030-1	030 = 7,5 060 = 4,0 0,3 -1,7					100 475 355 -	min.19,0 max. 1,0 415 =2,0		9,2-9,3

C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop	6 Rotational- speed limitat.				uel delivery 5			
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1		Note: changed to) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min	cm ³ /1000 strokes	rev/min 8	Control rod travel mm 9	
980	43,5-44,5 (42,0-46,0)	1020-1030*	700 500	(40,5-46,5)	100	109,0 - 116,5	300	7,0	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement '	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
		·	

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 3,8 m 1 3. Edition

En

PES 4 A 90 D 410 RS2294 RS2294 EP/RSV 350-1500 A2 B741L (1) 575-1100 A1 618L (2) supersedes 2.79
company Daimler-Benz
OM 314

**Set idle-speed auxiliary spring at 2.0 mm control-rod travel, then 1/2 turn back.

engine OM 314 (1 - 51 kW - 69 PS) (2 - 54 kW - 73 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,15-2,25
Port closing at prestroke(2,10-2,30)

mm (from BDC)

estoil-ISO 4113

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm ³ /100 strokes 3	cm ^S / 100 strokes	Control rod travel mm 2	Fuel delivery cm ² /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1450	9,1-9,2	5,2 - 5,4	0,3(0,45)	10,5	6,1 - 6,3	n = 1080 min-
350	7,4,6	0,9 - 1,5	0,2(0,4)	+ 0,1 6,4-6,6	1,1 - 1,7	n = 575
				4,-		

Adjust the juel delivery from each outlet according to the values in

B. Governor Settings

741 L

Degree of deflection of control lever	r rated speed Control rod travel mm	Control rod travel mm rev/min	Intermed	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm 9	rev/min	rque control Control rod travel mm 11
loose	1	0,3-1,0 5,0	-	=	-	ca.21	350 100	7,5** min.19	-	-
ca.60	8,1 4,2 1600	1495-1505 1555-1570 0,3 - 1,7					350 435-495 500	7,4-7,6 = 2,0 0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp. 40°C (104°F)	Rotational- speed limitat		el delivery aracteristics	Starting fidle	uel delivery 5	Ga	e stop Control rod
rev/min	cm ³ /1000 strakes 2	changed to .) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm ⁹ /1000 strokes 7	rev/min B	travel mm 9
1450	52,5-53,5 (50,5-55,5)	1495-1505	-	-	100	14,7-15,3	-	-
								./.

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

	rated speed		Intermediate rated speed			Lower rated speed Control and			3 Torque control	
deflection	travel	Control rod travel				Control- lever		Control rod	rev/min	Control rod travel
of control lever 1	mm 2	mm rev/min 3	4	5	6	deflection in degrees 7	rev/min 8	mm 9	10	11
loose	800	0,3-1,0				ca.28	575	5,5**	-	-
	x	= 2,4					100	min.19		
ca.58	9,5	1110-1120					575 580-610	5,4-5,6 = 2,0		
29	1250	0,3 - 1,7					650	max. 1,0		

C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat 3a Fuel delivery characteristics			Starting i	tuel delivery 5	4a Idle stop	
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to) rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1080	61,5-62,5 (59,5-64,5)	1110-1120*	-		100	14,7-15,3	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

Degree of deflection of control lever 1	Control rod travel mm	rev/min Control rod travel mm rev/min 3	Intermed	diate rated	speed	Control- lever deflection in degrees 7	rated speed Control rod travel mm 9	rque control Control rod travel mm
29								

C. Settings for Fuel Injection Pump with Fitted Governor

	li-load stop		speed in littar. Characteristics			Starting fuel delivery 5 4a Idle stop				
1		Note: changed to) rev/min 3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes 7		Control rod travel mm		
	·									
				•						

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 3,8 n 6 2. Edition

PES 4 A 90 D 410 RS 2570

ROV 300-1400 AB 1065-3DL

supersedes

5.81

company:

Daimler-Benz

engine:

OM 314 57 kW (77 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,20-2,30) mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
1400	10,5+0,1	5,9-6,0	0,3(0,45)			
300	8,3-8,5	0,9-1,5	0,2(0,4)			
400	11,3+0,2	C, Sp. 4u.5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Stidina s	leeve travel
Degree of deflection of control lever	rod travel	Control rod c travel mm rev/min		Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control tever 7	rev/min	Control rod trayel mm 3	rev/min	1 mm 11
max.	1650 9,5	15,2-17, 0 - 1, 1440-145 1535-156	0	-	***	-	ca.24	300	min.10,0 8,3-8,5 605 = mm	600	0,7-0,9 3,3-3,8 5,2-5,3 7,7
							3 a				

Torque control travel a =

1,0 mm

Set the stop screw to control-rod travel 3 - 3,5 mm.

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		Rotational-speed 2D limitation intermediate speed	Fuel deliv	rery characteristics 58 peed 5b	Starting Idle switchir		Torque- travel	control (5)
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	trsvel mm
1	2	3	4	5	6	7	8	9
1400	59,0-60,0 (57,0-62,0)	1440-1450*	400	44,0-46,0 (42,0-48,0)	100	72,25-82,25	1000	10,5+0,1 10,8+0,3 11,1+0,2 11,5+0,1
					100	-220 (80-240)		

Checking values in brackets

* 1 mm less control rod travel than col. 2



Festoil-ISO 4113

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 FIA 5,5 c 1. Edition

supersedes

company:

FIAT

engine:

8060.04.661 81 kW (110 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

PES 6 A 90 D 410 RS 2633

A. Fuei Injection Pump Settings mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,0-9,1	4,9-5,0	0,3(0,45)			
300	8,2-8,4	1,1-1,7	0,2(0,4)			

RQV 300-1500 AB1152 L

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated s	peed			Intermediate	rated sp	eed	Lower rated	speed	1	Sliding s	leeve travel
deflection of control		rev/min	(18) (28)	Degree of deflection of control lever	rev/min 5	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm (3	rev/min	mm 11
max.	1470 8,0 4,0 1800	15,2-17 1540-15 1635-16 0 - 1	50	-	-	-	ca.17 330-430	100 300	min.9,0 8,2-8,4 nax. 1,0		

0,6 mm Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2 rev/min cm³/1000 strokes		Rotational-speed (2b) limitation intermediate speed	high idle s	rery characteristics 5a poeed 5b cm³/1000 strokes	idle switchir	•	Torque- travei rev/min	Control od travel mm
1	2	3	4	5	6	7	8	9
1500	48,5-49,5 (46,5-51.5)	1540-1550*	-	-	100	99,25-119,25 at 16,0- 16,6 mm RW	500 860	9,0+0,1 9,6+0,1 9,4+0,2 9,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.81

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Festoil-ISO 4113

Test Specifications Fuel Injection Pumps (3) and Governors

VDT-WPP 001/4 MB 2,0 a 1 1. Edition

PES 4 M 50 C 320 RS14

EP/MN 60 M 28 DR

supersettes

company.

Daimler-Benz OM 615

(Schweden)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80 mm (from BDC)

(1.65-1.85)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference crn ³ / 100 strokes 4	Control rod travel mm 5	Fuel delivery cm ³ /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2000.	13,0	3,1-3,3	0,2(0,25)			
	(+0,1)					
250 1600/1000	9,1 (±0,1) Sect. C	0,4-1,0 , col. 4-6	0,15(0,2) 0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

	Leakage		Control limitation breakay	n			Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop			Control rod travel		Control rod travel		Control rod travel		Control rod travel
	mm water col.		mmw.c.	mm 5	mmw.c.	mm 7	mmw.c. 8		mm w.c. 10	mm 11
0,7+0,1	500-480	10	470	13,0	510 550	6,8,13,0 1,5- 8,7		9,9-10,8 9,0-10,0	150 325	13,7-13,8 13,1-13,5
			490-	510*		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		3,0 10,0	470	13,0-13,1
= rotational sp adjust branks	introl rod travel test (cols. 4-11) rotational speed 500 rev/min. Ijust braekaway (cols. 4-5) by means of shims* Imadjustment (B.8-9 - C.7-8) by means of shims*									

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load : Test oil te	stop screw imp. 40°C (104°	F)	Fuel deliv	ery characteri	stics	idle (stop id le (imb		Control road travel from full-load to I idle
rev/min	Vacuum mm wat. col.	cm ³ /1 000 strokes	rev/min	Vacuum mm wat. col. 5	cm³/1000 strokas 6	rev/min 7	Vacuum mm wat. col.	mm cm ³ /1000 strokes 8
2000	470	31,7-32,7 (30,7-33,7)	1600	300	29,4-30,9 (28,4-31,9)	500	525	2,0- 3,0
			1000	135	29,4-30,9 / (28,4-31,9)	250	ca.550	4,5-10,5
							-	

Checking values in brackets

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 HAN 10,8 h 3. Edition

PE 6 A 95 D 320 RS 2557 EP/RSV 350-1100 A8B1117DR

supersedes 2.81

MF-Hanomag company

D 962 engine

** Test cold-start device according to VDT-I-DAF 001, page 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30)

mm (from BDC)

2,15-2,25

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm3/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,0+0,1	9,1 - 9,3	0,3(0,6)			
400 700 500	7,9-8,1 10,5+0,2 10,6+0,1	C, 4-5	0,3(0,5) 0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

1 Uppe	r rated speed		Intermediate rated speed			Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min		5	6	Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
<u> </u>	-	13	4	13	10	l'	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.23	400	7,5		
	X =	4,50					100	min.19		10,0+0,1
ca.52	1165-11	50 = 9,0 95 = 4,0 0,3-1,7					400 580-640 700	7,9 19 = 2,0 0 - 1	960 500	10,2+0,2 10,6+0,1

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	Speed without Characteristics			Starting I	iuel delivery 5	(4a) idi	4a idle stop	
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note. changed to) rev/min 3	rev/min 4	cm [®] /1000 strokes 5	rev/min	cm ⁹ /1000 strokes	rev/min 8	Control rod travel mm	
1100	89,0-91,0 (87,0-93,0)	1140-1150*	700	93,0-96,0 (91,0-98,0)	100	19-21mmRW **	400	8,0	
			500	83,5-86,5 (81,5-88,5)					
	•								

Checking values in brackets

* 1 mm less control rod travel than col 2

10.81

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung. £ 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

Festoil-ISO 4113

Festoil-ISO 4113

WPP 001/4 MB 2,0 e

1. Edition

En

PES 4 M 50 C 320 RS59

EP/MN 60 M 52 DR

supersedes

company

Daimler-Benz

ngine OM 615

(Schweden)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at prestroke

1,70-1,80

mm (from BDC)

at max. RW

(1,65-1,85)

		حسن سيساب والمسائد والمسائد				
Rotational speed	Control rod travel	Fuel delivery	Difference cm ³ /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	100 strokes	mm	cm 1/100 strokes	mm
1	2	3	4	5	6	7
2000	13,0	3,1-3,3	0,2 (0,25)			
	(+0,1)					
	9,1				1	
250	(±0,1)	0,4-1,0	0,15(0,2)			
1600/1000	Sect.	C, col. 4-5	0,25(0,3)			9

Adjust the fuel delivery from each outlet according to the values in [______]

B. Governor Settings

	Leakage Control-rod travel limitation breakaway*		n			Auxiliary spring auxiliary cam**		Torque control		
	Vacuum pressure drop	Time at least		Control rod travel		Control rod travel	Vacuum	Control rod travel		Control rod travel
mm	mm water col.	s	mmw.c.	mm	mm w.c.	mm	mmwc	mm	mmw.c.	mm
1	2	3	4	5	6	7	8	9	10	11
0,7+0,1	500-480	10	470	13,0	1	7,2-13,0	540	10,0-11,0		13,0-13,1
			520-	540*	600	0,3-6,5	650	9,3-10,3	325	13,2-13,5
= rotational speakav	ontrol rod travel test (cols. 4-11) rotational speed 500 rev/min. djust breakaway (cols. 4-5) by means of shims* cam adjustment (B 8-9 - C 7-8) by means of shims*				•			•	150	13,7-13,8

C. Settings for Fuel Injection Pump with Fitted Governor

	stop screw mp. 40°C (104°	F)	Fuel deliv	ery character	stics	idle (stop idle (imb		Control road travel from full-load to lidle
rev/min	Vacuum mm wat. col. 2	cm ³ /1000 strokes 3	rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	rev/min	Vacuum mm wat. col	mm cm ³ /1000 strokes 8
2000	470	31,7-32,7 (30,7-33,7)	1600	300	29,4-31,0 (28,4-32,0)	500	550	2,0-3,0
		1	1000	135	29,4-31,0 (28,4-32,0)	250	700	4,5-10,5

Checking values in brackets

6.76

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 f

Edition

PES 4 M 50 C 320 RS 14 RS 59 EP/MN 60 M 34 DR (1) M 34 DR (2) supersedes

Daimler-Benz company

OM 615 engine

HHF-Transporter (1) NG -Transporter (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC) 1,70-1,80

18 mm RW

(1.65-1.85)

		(1,00 1,00	/			
Rotational speed	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm 5	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm 7
<u>'</u>	1-	 	- `		 	
2000	13,2	3,2-3,4	0,2(0,25)	<u> </u>		
	(+0,1)					
250	9,0-9,2	0,4-1,0	0,15(0,2)			
1600/1000	Sect.	d, col. 4-6	0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

	Leakage Control-rod travel limitation breakaway*				Auxiliary spring auxiliary cam**		Torque control			
Torque control travel	Vacuum pressure drop	Time at least		Control rod travel		Control rod travel	Vacuum	Control rod travel	Vacuum	Control rod travel
mm	mm water col	s	mmwc	mm	mmw c.	mm	mmwc	mm	mm w.c.	mm
1	2	3	4	5	6	7	8	9	10	11
1,2+0,1	500-480	10	500	13,2	540	7,0-13,2	650	9,4-10,4	500	13,2-13,3
520 - 540* control rod travel test (cols. 4-11) = rotational speed 500 rev/min.					650	0 - 3,6	800	ca. 8,5	250	13,2-13,5 14,1-14,5 14,4-14,5
	just breakaway (cols. 4-5) by means of shims* m adjustment (B 8-9 - C 7-8) by means of shims**									

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F)			Fuel dela	very character	istics	idle (stop idle (imb		Control road travei from full-load to
rev/min	Vacuum mm wat. col 2	cm ³ /1000 strokes 3	rev/min	Vacuum mm wat. col 5	cm ³ /1000 strokes 6	rev/min 7	Vacuum mm wat col	mm cm ³ /1000 strokes 8
2000	500	32,7-33,7 (31,7-34,7)	1600	300	31,4-33,0 (30,4-34,0)	500	550	2,2- 3,2
			1000	135	31,9-33,5 (30,9-34,5)	250	700	4,5-10,5

Checking values in brackets

11.76

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Testoil-ISO 4113

VDT-WPP 001/4 ⊞B 2,0 c

3. Edition

PES 4 M 50 C 320 RS14 EP/MN 60 M 32

supersedes company

engine

3.76 Daimler-Benz OM 615

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80 (1,65-1,85)

at max. RW

		(1,000)				
Rotational speed	Control rod travel	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rud travel mm	Fuel delivery cm ¹ /100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3)	4	5	6	7
2250	13,3	3,3-3,5	0,2 (0,25)			
	(+0,1)					
250	9,1	0,4-1,0	0.45(0.0)			
1600/1000	(±0,1) Sect. (c, col. 4-6	0,15(0,2) 0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [_____

B. Governor Settings

	Leakage Control-rod travel limitation breakaway*		ก				Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop			Control rod travel		Control rod travel		Control rod travel	Vacuum	Control rod travel
mm	mm water col.	s	mmw c.	mm	mmw.c.	mm	mm w c.	mm	mmw.c.	mm
1	2	3	4	5	6	7	8	9	10	11
0,6+0,1 5	500-480	10	490	13,3		8,8-13,3 2,0-7,7	600 700	10,1-11,1 9,3-10,3	75 175	13,8-13,9 13,4-13,7
= rotational sp adjust breakay	control rod travel test (cols. 4-11) rotational speed 500 rev/min. adjust breakaway (cols. 4-5) by means of shims* cam adjustment (B 8-9 - C 7-8) by means of shims*								300 490	13,3-13,4 13,3-13,4

C. Settings for Fuel Injection Pump with Fitted Governor

	stop screw mp. 40°C (104°	F)	Fuel deli	very character	stics	idle (sto) idle (imb		Control road travel from full-load to idle
rev/min	Vacuum mm wat col 2 🌼	cm ³ /1000 strokes 3	rev/min	Vacuum mm wat. col. 5	cm³/1000 strokes 6	rev/min	Vacuum mm wat col	mm cm³/1000 strokes 8
2250	490	33,7-34,7 (32,7-35,7)	1600	350	30,4-32,0 (29,4-33,0)	500	530	2,0- 3,0
			1000	125	29,4-31,0 (28,4-32,0)	250	ca. 800	4,5-10,5

Checking values in brackets

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restoil-ISO 4113

VDT-WPP 001/4 MB 2,0 d
4. Edition

supersedes

company

2.76
Daimler-Benz

engine

OM 615

A. Fuel Injection Pump Settings

Port closing at prestroke

PES 4 M 50 C 320 RS59

1,70-1,80

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

mm (from BDC)

EP/MN 60 M 45 DR

EP/MN 60 M 49 DR

(1,65-1,85)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm 1/100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 5	Fuel delivery cm 1/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2000	13,2	3,2-3,4	0,2 (0,25)			
	(+0,1) 9,1					
250 1600/1000	(±0,1) Sect.	0,4-1,0 C, col. 4-5	0,15(0,2) 0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

	Leakage Control-rod travel limitation breakaway*		n			Auxiliary auxiliary		Torque control		
Torque control travel	Vacuum pressure drop	Time at least		Control rod travel	Vacuum	Control rod travel	Vacuum	Control rod travel		Control rod travel
mm	mm water col	s	mmw c.	mm	mmwc	mm	mmwc	mm	mm w.c.	mm
1	2	3	4	5	6	7	8	9	10	11
1,2+0,1	500-480	10	500	13,2		6,8-13,2 0 - 3,6	575 650	9,8-10,8 9,3-10,3		14,4-14,5 14,2-14,5
	vel test (cols. 4-		520	- 540		0 3,0	030	3,3 10,3	400	13,2-13,5 13,2-13,3
adjust breakey	eed 500 rev/mir vay (cols. 4-5) l nt (8 8-9 - C 7-	y means			1					

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load s Test oil te	stop screw mp. 40°C (104°	F)	Fuel deli	very character	stics	idle (stop idle (imb		Control road travel from full-load to	
rev/min 1	Vacuum mm wat col 2	cm ³ /1000 strokes 3	rev/min 4	Vacuum mm wat. col. 5	cm ³ /1000 strokes 6	rev/min 7	Vacuum mm wat. col	mm cm³/1000 strokes 8	
2000	500	32,7-33,7 (31,7-34,7)	1600	300	31,4-33,0 (30,4-34,0)	500	550	2,2- 3,2	
			1000	135	31,9-33,5 (30,9-34,5)	250	700	4,5-10,5	

Checking values in brackets

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Test Specifications

Fuel Injection Pumps and Governors

RS14Z

VDT-WPP 001/4 MB 2,0 a

3.76

4. Edition

PES 4 M 50 C 320 RS14

EP/MN 60 M 25 DR

EP/MN 60 M 25 DR ./.

supersedes

company engine

Daimler-Benz OM 615 (200 D)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,79-4000 mm (from BDC) (1,65-1,85)

max. Control rod travel

Control rod travel mm	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm	Fuel delivery cm ¹ /100 strokes 6	Spring pre-tensioning (torque-control valve) mm
13,2	3,2-3,4	0,2 (0,25)	12,6	2,9-3,1	
(+0,1) 9,1 (±0,1)	0,4-1,0	0,15(0,2)	(+0,1) 9,1 (±0,1)	0,4-1,0	
1	13,2 (+0,1) 9,1 (±0,1)	travel mm cm³/100 strokes 2 3 13,2 3,2-3,4 (+0,1) 9,1 (±0,1)	travel cm 1/100 strokes 2 cm 1/100 strokes 4 cm 3/100 strokes 4 100 strokes 4 0,2 (0,25) (+0,1)	travel cm ³ /100 strokes 2 cm ³ /100 strokes 4 cm ³ /100 strokes 4 cm ³ /100 strokes 4 5 cm ³ /100 strokes 4 5 cm ³ /100 strokes 4 cm ³ /100 strok	travel cm $^{1}/100 \text{ strokes}$ cm $^{1}/1$

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

25 DR with S14

								23 DK WIGH 314				
	Leakage		limitatio	Control-rod travel limitation breakaway*		rod travel test	Auxiliary auxiliary		Torque control			
Torque control travel	Vacuum pressure drop	Time at least		Control rod travel		Control rod travel		Control rod Iravel	Vacuum	Control rod travel		
mm	mm water col.	s	mmw c.	നന	mmwc.	mm	mmwc	mm	mm w.c.	mm		
1	2	3	4	5	6	7	8	9	10	11		
1,2+0,1	500-480	10	470	13,2	510 550	7,2-13,2	550 625	9,8-10,8 9,3-10,3	150 225	14,4-14,5 14,1-14,5		
			490	- 510*	7 330	1,5-0,5	023	3,3-10,3	400 470	13,2-13,		
= rotational sp adjust breakay	ontrol rod travel test (cols. 4-11) rotational speed 500 rev/min. idjust breakaway (cols. 4-5) by means of shims* am adjustment (8 8-9 - C 7-8) by means of shims**								470	13,2-13,		

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load s Test oil ter	top screw np. 40°C (104°	F)	Fuel deliv	rery character	estics	idle (stop idle (imb		Control road travel from full-load to idle
rev/min	Vacuum mm wat. col 2	cm ³ /1 000 strokes	rev/min	Vacuum mm wat col 5	cm ³ /1000 strokes 6	rev/min	Vacuum mm wat col	mm cm ³ /1000 strokes 8
2000	470	32,7-33,7 (31,7-34,7)	1600	300	31,4-32,9 (30,4-33,9)	500	510	2,2- 3,2
			1000	135	31,9-33,4 (30,9-34,4)			
					(30,3 34,4)	250	ca. 800	4,5-10,5

Checking values in brackets

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K10

B. Governor Settings

	Leakage		limitatio	Control-rod travel limitation breakaway*				spring cam**	Torque control	
Torque control travel	Vacuum pressure drop	Time at least		Control rod travel		Control rod trayel	Vacuum	Control rod travel	Vacuum	Control rod travel
ищ	mm water col	s	mmwc	mm	mmwc	mm	mmwc	mm **	mmwc	mm
1	2	3	4	5	6	7	8	9	10	11
1,2+0,1	500-480	0 10	470	12,6	510	7,0-12,6	550	10,0-11,0	150	13,7-13,8
					550	1,6-8,7	625	9,5-10,5	225	13,4-13,7
 rotational sp adjust breakar 	vel test (cols 4- eed 500 rev/mi way (cols 4-5) int (B 8-9 - C 7-	n by mean	s of shim	- 510					400 470	12,6-12,9 12,6-12,7

C. Settings for Fuel Injection Pump with Fitted Governor

	stop screw mp 40°C (104°	FI	Fuel deliv	ery character	stics	idle (stop idle (imb		Control road trave from full-load to I idle
rev/min 1	Vacuum mm wat col	cm ¹ /1000 strokes 3	rev/min 4	Vacuum mm wat col 5	cm '/1000 strokes 6	rev/min 7	Vacuum mm wat col	mm cm ^{-/} 1000 strokes 8
2000	470	29,7-30,7 (28,7-31,7)	1600	300	28,4-29,9 (27,4-30,9)	500	525	1,5-2,5
			1000	135	28,9-30,4 (27,9-31,4)	250	ca.800	4,5-10,5
					(27,9-31,4)	250	ca.800	4,

Checking values in brackets

Testoil-ISO 4113

Festoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,2 a 1

2. Edition

supersedes

company

s.u. Daimler-Benz

EP/MN 60 M 36 DR

OM 615 HHF engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

PES 4 M 55 C 320 RS 47

1,70-1,80 (1,65-1,85)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2 .	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 5	Fuel delivery cm ³ /100 strokes 6	Spring pre-tensioning (torque-control valve) mm
1750	12,9	3,4-3,6	0,2 (0,25)			
250	(+0,1) 9,1 (±0,1)	0,4-1,0	0,15(,2)	•		

Adjust the fuel delivery from each outlet according to the values in [______

B. Governor Settings

	Leakage		Control limitation breakay		Control	od travel test	Auxiliary spring auxiliary cames		Torque control	
	Vacuum pressure drop	Time at least		Control rod travel	Vacuum	Control rod travel	Vacuum	Control rod travel		Control rod travei
mm	mm water col	s	mmw c.	mm	mmwc	mm	mmwc	mm	mm w.c.	mm
1	2	3	4	5	6	7	8	9	10	11
0	500-480	10	45°	12,9	490 525	6,2-12,9 1.0- 8.6	525 625	10,7-11,7 9,9-10,9	-	-
 rotational sp adjust breaker 	vel test (cols. 4– eed 500 rev/mir way (cols. 4–5) I nt (8 8–9 – C 7-	n by mean	s of shim							

C. Settings for Fuel Injection Pump with Fitted Governor

	Full-load stop screw Test oil temp. 40°C (104°F) rev/min Vacuum cm³/1000 strokes 1 2 3			rev/min Vacuum cm³/1000 strokes			o)** alance) (Vacuum mm wat col	Control road travel from full-load to idle mm cm ³ /1000 strokes 8
1750	450	34,7-35,7 (33,7-36,7)				500	500	1,0- 2,0
						250	ca.500	4,5-10,5

Checking values in brackets

3.76

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Test Specifications Fuel Injection Pumps (A) and Governors

WPP 001/4 EIC 2,9 b

1. Edition

En

PES 3 A 90 D 320 RS 2626

RSV 300-1075 A 1 B 2146 R

supersedes

company

engine

Eicher EDL 3-5

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing Norestroke (2,15-2,35)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ⁹ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1075	12,4+0,1	8,3 - 8,4	0,2(0,45)			
300	6,9-7,1	0,7 - 1,3	0,2(0,4)			
500	13,4+0,1	C,Sp 4 u. 5	0,3(0,55)			
	_					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Uppe	r rated speed	rev/min	Interme	diate rate	d speed	Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm 9	rev/min	Control rod travel mm
loose	800 X =	0,3-1,0 5,0	-	-	-	ca.27	300 100	6,5 min.19,0		12,4+0,1 12,8+0,2
	^ =	5,0					300	6,9-7,1		13,4+0,1
ca.60	11,4 4,0 1330	1115-1125 1160-1190 0,3 - 1,7					385~445	= 2,0mm		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat.		iel delivery jaracteristics	Starting t	fuel delivery 5	4a idle stop	
Test oil to rev/min	emp. 40°C (104°F) cm\$/1000 strokes 2	Note: changed to .) rev/min 3	rev/min	cm ⁹ 1000 strokes 5	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1075	83,0 - 84,0 (81,0 - 86,0)	1115-1125*	500	83,0 - 84,0 (81,0 - 88,0)	100	19,0-21,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.81

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Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 6,2 k 1

2. Ausgabe

PE 6 A 85 D 320 RS 2546

RSV 250-1300 A 1 B 2025 R

supersedes

7.81

See Service Information VDT-I-DAF 004

company engine

DAF DF 615

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Port closing difference between control-rod travel 9 and controlrod travel $21 = 3,0-4,0^{\circ}$ camshaft

A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25 (2.1 - 2.3)

mm (from BDC)

at RW 9

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm ³ /100 strokes	100 strokes	mm	cm ⁹ /100 strokes	mm
1	2	3	4	2	3	6
1000	10,2+0,1	5,5 - 5,6	0,3(0,45)			
250	7,3-7,7	1,4 - 1,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Uppe	r rated speed	i rev/min	intermed	diate rated	speed	(4)	Lower	rated speed	3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm 9	rev/min	Control rod travel mm 11	
loose	800 x =	0,3-1,0 4,0	-	-	•	ca.21	250 100 250	min.19,0	1000 400 300	10,2+0,1 10,2+0,2	
ca.67	9,2 4,0 1540	1340-1350 1355-1385 0,3 - 1,7					250 310-370 600	5,9-6,1 = 2,0 max. 1,0	300	10,3+0,5	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	emp. 40°C (104°F)	6 Rotational- speed limitat		iel delivery iaracteristics i	Starting findle	uel delivery 5	idle stop	
rev/min	cm³/1000 strokes 2	changed to) rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min	cm ² /1000 strokes 7	rev/min 8	travel mm 9
1000	55,0-56,0 (53,0-58,0)	1340-1350*	-	-	100	19,0-21,0	-	-

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Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 EIC 5,9 a
5. Edition

En

PES 6 A 80 D 320 RS 1280

RSV 300-1150 A0B 2005 R

supersed∈s

4.80 Eicher

company engine

EDK 6-5 Turbo 98 kW (133 PS)

1 - 5 - 3 - 6 - 2 - 4 je 60°

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,10-2,30) 2,15-2,25

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ² /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	10,6-10,7	6,4 - 6,5	0,2(0,35)			
300	7,4 - 7,6	1,3 - 1,9	0,2(0,3)			
	~					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

	rated speed Control rod travel mm		Intermed	hate rated	speed	Control- tever deflection in degrees		rated speed Control rod travel mm	rev/min	rque control Control rod travel mm
loose	800 X =	0,3-1,0 6,0	-	-	-	ca.30	300	5.5 min.19,0	10	•
ca.54	1230-1	180= 9,6 260=4,0 ,3 - 1,7					300 495-555 650	5,9-6,1 = 2,0 0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

6	sil-load stop	6 Rotational- speed limital		iel delivery iaracteristics	Starting I	uel delivery 5	4a Idle stop	
Test oil to rev/min 1	emp. 40°C (104°F) cm\$/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm\$1000 strokes	rev/min	cm ⁹ /1000 strokes		Control rod travel mm 9
1130	65,0-66,0 (63,5-67,5)	1170-1180*		·	100	16,0-16,6	300	7,5

Checking values in brackets

* 1 mm less control rod travel than col 2

12.81

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. € 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Alternagne par Robert Bosch GritbH

Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 EIC 3,9 e 2. Edition

Εn

PES 4 A 80 D 420 RS 1277 Z

RSV 300-1000 A 1 B 643 DR

supersedes

8.80

1 - 2 - 4 - 3 0 -90 -180-270 company

Eicher EDK 4-8 u. EDK4-1

engine

48 kW (65 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,10-2,30) 2,15-2,25

mm (from BDC)

Festoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm3/100 strokes 3	Difference cm ^{SV} 100 strokes 4	Control rod travel mm 2	Fuel delivery cm\$100 strokes 3	Spring pre-tensioning (torque-control valve) mm
980	9,3-9,4	5,2 - 5,3	0,2(0,3)			
300	7,4-7,6	1,1 - 1,5	0,2(0,3)			
800/500		C,Sp. 4-5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Uppe	r rated speed	rev/min	Interme	diate rated	speed	(4)	Lower	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800 x =	0,3-1,0 5,25	-	•	•	ca.27	300 300	5,5 5,9-6,1	980 810	9,3-9,4 9,6-9,8
ca.55	1040-1	030 = 8,3 070 = 4,0 0,3 - 1,7					100 370-430	min. 19 = 2,0	500	9,9-10,0

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

Starting fuel delivery 5 4a Idle stop	el delivery aracteristics		6 Rotational- speed limitat	ili-load stop	
s rev/min cm³/1000 strokes rev/min mm 6 7 8 9	cm ⁹ /1000 strokes	revimin 4	Note. changed to .) rev/min 3	emp. 40°C (104°F) cm ⁹ /1000 strokes 2	Test oil te rev/min 1
	51,5-54,5 (50,0-56,0)	800	1020-1030*	52,5 - 53,5 (51,0 - 55,0)	980
	49,5-51,5 (48,0-53,0)	500			
		ວບບ			

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 EIC 5,9 b 2. Edition

Er

PES 6 A 80 D 320 RS 1280 RSV 300-1150 A0B 2001 DR

supersedes company 4.80 Eicher

1 - 5 - 3 - 6 - 2 - 4 je 60°

engine

EDK 6-4 Engine suction 77 kW (105 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,10-2,30) 2,15-2,25

mm (from BDC)

estoil-ISO 4113

Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ² /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
8,9-9,0	5,1 - 5,2	0,2(0,35)		·	
6,1-6,3	0,7 - 1,3	0,2(0,3)			
	C, Sp 4-5	0,3(0,4)			
	mm 2 2 8,9-9,0	travel mm 2 cris/100 strokes 3 8,9-9,0 5,1 - 5,2 6,1-6,3 0,7 - 1,3	travel mm 2 cm³/100 strokes cm³/ 100 strokes 4 100 strokes 4 8,9-9,0 5,1 - 5,2 0,2(0,35) 6,1-6,3 0,7 - 1,3 0,2(0,3)	travel mm 2 cm³/100 strokes cm³/ 2 8,9-9,0 5,1 - 5,2 0,2(0,35) 6,1-6,3 0,7 - 1,3 0,2(0,3)	travel mm 2 cm³/100 strokes cm³/ 100 strokes mm 2 cm³/100 strokes 8,9-9,0 5,1 - 5,2 0,2(0,35) 6,1-6,3 0,7 - 1,3 0,2(0,3)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1	r rated speed Control rod		Interme	diate rated	speed	4		rated speed	3 Torque control		
Degree of deflection of control lever	travel mm	travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	travel mm	rev/min	travel mm	
loose	800 X =	0,3-1,0 5,25	-	-		ca.26	300 100	5,7 min.19,0	130 785	8,9 9,2	
ca.50	1205-1	180=7,9 235=4,0 ,3-1,7					300 485-545 650	6,1-6,3 = 2,0 max. 1,0	500	9,5	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Fu	ili-load stop	6 Rotational- speed limitat.	120365	uel delivery naracteristics	Starting f	uel delivery 5	4a Idle stop		
Test oil to rev/min 1	emp. 40°C (104°F) cm ³ /1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm ³ /1000 strokes 5	rev/min	cm ² /1000 strokes	rev/min	Control root travel mm	
1130	51,5-52,5 (50,0-54,0)	1170-1180*	900 500 .	48,5-51,5 (47,0-53,0) 46,5-48,5 (45,0-50,0)	100	16,3-16,9	300	6,2	

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. c. 1980 by Robert Bosch GmbH, Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

Test Specifications 2 Fuel Injection Pumps 2 wpp 001/4 KHD 6,1 g and Governors

6. Edition

estoil-ISO 4113

PES 6 A 85 D 410/3 RS 2415 Komb - Nr. 0 400 856 024

RQ 300/1250 AB 935 DL

supersedes company:

9.85 KHD

engine:

BF 6 L 913 T

96 kW

at 2500 min 1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1.85-2.05) mm (from BDC)

		1,00-2,007				
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1250	12,1+0,	8,0 - 8,1	0,3(0,45)			
300	8,3-8,5	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of a PRG check Correv/min	ntrol rod el	Full-toad s Setting po rev/min	int Control	Test spec Control red travel	rev/min	Idle spee Setting p rev/min	Control red travel	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod	3
	9,2-20,8 ax. 46°		20,0	-	1295-1310 1370-1400 0 - 1,0	300		100 i 300	nin. 9,8 8,3-8 ,5 10=2,0	800 910	12,1-12,2 13,3-13,4 13,0-13,5 12,4-12,7	4 2

Torque-control travel

Speed regulation: At 1295-1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	(elivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	rery characteristics		Starting fo	uel delivery 6
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	,	rev/min 6	red travel cm ³ /1000 strokes:/ mm 7
1250	80,0 - 81,0 (78,0 - 83,0)	-	800	85,0-87,0 (82,5-89,5)		100	105,0 - 115,0 (102,0 - 118,0)

Checking values in brackets

11.85

②

Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 KHD 8,8 a 1

1. Edition

Testoil-ISO 4113

PES 4 A 95 D 410 RS 2424

PQ 300/1250 AB 1133 L

supersedes

company: TAM

engine: F 4 L 413 FR 94 kW (128 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,7-1,9

mm (from BDC)

m	cm ³ /100 strokes	cm³/ 100 strokes	mm	cm ³ /100 strokes	mm
	0100	-	2	3	6
		[0,3](0,6)			-
0,1+0,2			i		
)	7-9,8 ,9-6,1 ,1+0,2	,9-6,1 0,9-1,5	3 7-9.8 9,1-9,3 0,3 (0,6) 9-6,1 0,9-1,5 0,3 (0,5)	3 7-9.8 9,1-9,3 9-6,1 0,9-1,5 0,3 (0,6) 0,3 (0,5)	3 7-9.8 9,1-9,3 9-6,1 0,9-1,5 0,3 (0,6) 0,3 (0,5)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

PRG che	g of slider ck Control rod travel mm 2			_	rev/min	tdle spec Setting p rev/min 7	•		cifications 5 Control rod travel mm	Torque of rev/min	Control rod (3)
600	15,6-16,4	600	16,0	8,7 4,0 1450	1290-1300 1350-1380 0-1,0	300	6,0	300 390 - 4	5,9-6,İ	830	9,7-9,8 0,1-10,2 9,9-10,1 9,7-10,0
	ontrol travel ght assembly dimen	sion a =	0,2	mm	Spe	ed regula	tion: At	1290-	1300 min ⁻¹		1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 38	Fuel deliv	ery characteristics	Startin Idle sp	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/mi	Cantral red travel in cm³/1000 strokes:// mm
1250	89,5 - 91,5 (87,5 - 93,5)	-	750	89,5 - 92,5 (87,5 - 94,5)	100	bei 14,0-14,6
			500	81,0 - 84,0 (79,0 - 86,0)		mm RW

Checking values in brackets

Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 DAF 8,3 i 1
3. Edition

En

PE 6 A 90 D 410 RS 2524

RSV 250-1200 A 5 B 2012 DL

· supersedes

12.80

company engine

DAF DH 825

** Cold start test on EP/RSV governor according to Service Information

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,25-2,45) 2,30-2,40 RW 9 mm (from BDC) Port closing difference between control-rod travel 9 and max. 4.5-5.5°

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm²/100 strokes 3	Difference cm3/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ⁹ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	9,4-9,5	7,0-7,1	0,3(0,45)			
250	6,5-6,7	0,9-1,5	0,3(0,4)			
-						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Uppe	r rated speed	rev/min	Interme	diate rated	speed	(4)	Lowe	r rated speed	(3) To	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever	1	Control rod travel		Control rod travel
of control	mm	mm rev/min				deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.16	250	5,5	1000	9,4-9,5
	X =	3,0					100 250	min.19 5,9-6,1	400	9,4-9,6 9,5+0,5
ca.49	1260-12	250 = 8,4 290 = 4,0 0,3-1,7				580-640	725	max.1,0	300	9,570,5
	1. 100	-,				1500 010				

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

W	ili-load stop	6 Rotational- speed limitat	speed limitat characteristics				Starting fuel delivery 5 4a idle stop				
Test oil te rev/min 1	emp. 40°C (104°F) cm ³ /1000 strokes 2	Note changed to) rev/min 3	rev/min	cm [®] /1000 strokes 5	rev/min	cm ² /1000 strokes	rev/min	Control rod travel mm			
1000	70,0-71,0 (68,0-73,0)	1240-1250*	700	-	100	19,0-21,0 **	•	-			

Checking values in brackets

BOSCH

10.81

^{* 1} mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 5,7 v

2. Edition

PES 6 A 90 D 410 RS 2596

RQV 300-1400 AB 1066 DL

supersedes 10.79

company: engine:

Daimler-Benz OM 352 A

124 kW (169 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
2,00-2,10
Port closing at prestroke
(1,05,2,15)

Port closing at prestroke

mm (from BDC)

Cv1. 6

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,4-11,5	7,3-7,5	0,3(0,45)			
300	8,2- 8,4	0,9-1,5	0,2(0,4)			
500/500	-	C, 4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated	peed			Intermediate	rated sp	ed	Lower rated	speed	4	Sliding s	leeve travel
deflection	rev/min Control	Control rod travel	(18)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travei		1
lever	rod travel mm	mm ((2a)	iever	rev/min	mm (4)	lever	rev/min	mm 3	rev/min	mm
1	2	3	_	4	5	6	7	8	9	10	11
ca.68	1400 750	15,2-17, 0 - 1	8	-	-	-	ca.15	100 300 730-	min.9,8 8,2-8,4 790=2,0	300. 485 1470	1,2-1,3 2,4-2,6 8,3
ca.		1460-147 1585-161					400-460 3				•

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten rev/min	stop	Rotational-speed ② limitation intermediate speed rev/min 3	high idle s	very characteristics 5e peed 5b cm³/1000 strokes	Starting Idle switchir rev/min 6	_	Torque- travel rev/min	Control cod travel mm
LDA 1400	0,35 bar 72,5-74,5 (70,5-76,5)	1460-1470*	LDA 500 LDA 500	0,35 bar 67,5-69,5 (65,5-71,5) 0 bar 52,0-54,5 (50,5-56,5)	100 100 -	72,25-82,25 220 (80-240)	1220 1000	11,4-11,5 11,5-11,8 12,1-12,3 11,5-11,8

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

MB 5,7 v

-2-

Testoil-ISO 4113

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
2596 with 1066	0,35		12,5 - 12,6
		0,25	12,1 - 12,2
		0,10	11,3 - 11,5
		0	11,1 - 11,2

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K23

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6.1 i

5. Edition

ED

PES 6 A 85 D 410/3 RS 2415 Komb.-Nr. 0 400 836 023 RQV 300-1250 AB 1131 L

supersedes 3.84 companyKHD

engine BF 6 L 913 T 96 KW at 2500 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Control rod travel

12,0+0,

8,3-8,5

mm

Rotational speed

rev/min

1250 300

Port closing at prestroke (1.85-2.05) mm (from BDC

Fuel

cm³/

-2.05)	min (ironi BDC)			
/100 strokes	Difference cm ³ / 100 strokes 4	Control rod travel mm	Fuel delivery cm ³ /160 strokes	Spring pre-tensioning (torque-control valve) mm
7,8 - 7,9 0,9 - 1,5	0,3(0,45 0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
deflection of control	rev/min Control rod travel mm 2	Control rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	min 11
max.	1385	15,2-17,8	-	-	-	ca. 17	100	min. 10,0	250	0,9~1,1
ca. 65	11,0 4,0 1525	1290-1300 1400-1430 0-1,0				450-550		8,3-8,5 705 =2,0		3,9-4,1 5,4-5,6 7,8
						3				

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		Rotational-speed 2b timitation intermediate speed	odiate speed (56)			fuel delivery 6	Torque- travel	control 5	
rev/min	cm ³ /1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	travel mm	
1250	78,0-79,0 (76,0-81,0)	1290-1300*	600	71,5-73,5 (69,0-76,0)	100	105,0-115,0 102,0-118,0) =17,4- 17,8 mm RW	600	12,0+0, 12,8+0, 12,3+0,	

Checking values in brackets

* 1 mm leas control rod travel than col. 2

9.85

BOSCH

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Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 011/4 - OMB 1. Edition

En

supersedes

PES 6 A 90 D 410 RS 2458

ROV 325-1050 AB 979 DL

company.

OM-Brescia

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2 10-2 30)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 atrokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,9+0,1	7,8-7,9	0,3(0,45)			
325	7,5-7,7	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated	speed			Intermediate	rated spe	ed .	Lower rated	speed	1	Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel	mayer .	9 (3	Degree of deflection of control lever	rey/min	Control rod travel	Degree of deflection of control lever	rav/min	Control rod travel	rev/min	(1)
1	2	3	۳	4		6	7	8	9	10	11
max.	1050	15,2-17	,8	-	-	-	ca.18	100	min.10,0 6,0-6,2	300 550	1,4-2,4
ca.66	9,9	1090-11 1150-11							500= 2,0 max.1,0	800 1050	4,0-4,5 5,6-6,0 8,2
	1300		,0			•	350-450				,,,
							3				

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		limitation intermediate speed	Fuel deli- high idle s	rery characteristics 5e	idle	fuel delivery (6)	Torque-control (travel Control travel	
rev/min	cm³/1000 strokes	rev/min 44	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	ten/min	mm
1	2	3	4	5	6	7	8	9
1050	78,0-79,0 (76,0-81,0)	1090-1100*	500	66,0-69,0 (64,0-71,0)	100	15,0-15,6 mm RW	-	-

Chucking values in brackets

* 1 mm less control rod travel than col. 2

11.81

BOSCH

Geschäftsbereich KM. Kundendienst. Kfz-Ausrüstung. C by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach SO Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

estoil-ISO 411

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 5.7 x

2. Edition

PES 6 A 90 D 410 RS 2293

RQV 300-1400 AB 1140 L RQV 300-1400 AB 1141 L ROV 300-1400 AB 1142 L

4.81 supersedes

Daimler-Benz company: engine:

OM 352 A 124,0 kW (169 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Banches and Testers

A. Fuel injection Pump Settings 2,15-2,25
Port closing at prestroke (2,10-2,30) mm mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	cm ³ /100 strokes cm ³ /100 st		Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1375	11,3+0,1	7,4-7,5	0,3(0,45)			
300 500	7,6-7,8 10,4+0,1		0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

..AB 1140 L,..AB 1141 L,..AB 1142 L

Upper rated s	peed		Intermediat	e rated sp	eed	Lower rated	speed		Sliding s	legve travel
deflection	rev/min Control	46101	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
of control lever	rod travel	rev/min	lever	rev/min	mm 4	lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1140 1650	15,2-17,8 0 - 1,0		-	-	ca.15	100 300	min.9,2 7,6-7,8	250 600 950	0,9-1,1 3,1-3,4 5,3-5,5
ca.61		1435-1445 1550-1580				350 - 475			1400	8,2
						<u>3a</u>				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten	stop np. 40°C (104°F) 2	Rotational-speed 20 limitation intermediate speed	(3)		idle switchin	_	Torque- travel	Control 5 Control rod travel
1	2	3	4	5	6	7	8	9
LDA 1375	0,7 bar 74,0-75,0 (72,0-77,0)	1435-1445*	LDA 500	0 bar 54,0-56,0 (52,0-58,0)	100	14,3-14,7 n	=700	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

Test at n =

1 375

rev/min decreasing pressure - in bar gauge pressure

MB 5,7 x

-2-

Testoil-ISO 4113

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6ARS2293	0,7		11,3 - 11,4
AB1140L		0	10,9 - 11,0
withAB1141L AB1142L		0,28	11,1 - 11,2

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

4,

WPP 001/4 MB 5,7 x 1 2. Edition

supersedes

5.81

company:

Daimler-Benz

engine:

OM 352 A

124 kW (169 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings 2,15-2,25 Portclosing at prestroke (2, 1-2, 3) mm

PES 6 A 90 D 410 RS 2293

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1375	11,3+0,1	7,4-7,5	0,3(0,45)	U		
300 500	7,6-7,8 10,9+0,1		0,2(0,4) 0,4(0,55)			

RQV 300-1400 AB 1138 L

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

Upper rated	speed			Intermediate	rated sp	ed	Lower rated	speed		Slidina s	leeve travel
Degree of deflection of control	rev/min Control rod trave	Control rod travel mm	(1a)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
lever	mm	rev/min	(28)	lever	rev/min	mm (4)	lever.	tev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	ļ ' ——	8	9	10	11
max.	1500 1650	16,0-19 0 - 1	,4 ,0	_	-	-	ca.15	100 300	min.9,2 7,6-7,8	250 600	0,9-1,1 3,1-3,4
ca.61		1435-144 1550-158					350-475			1000 1400	5,5-5,7 8,2
							3 e				

Torque controi travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deliv	very characteristics (5e)	Starting Idle switchir		Torque- travei	Control rod	
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	c@3/1000 strokes	rev/min	travel mm	
1	2	3	4	5	6	7	8	9	
LDA 1375	0,7 bar 74,0-75,0 (72,0-77,0)	1435-1445*	LDA 500	0 bar 54,0-56,0 (52,0-58,0)	10ů	14,3-14,7 mm RW	700	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. C by Robert Boach GmbH, D-7 Stuttgart 1, Postfach So. Printed in the Federal Republic of Germany Imprime en Republique Féderale d'Allemagne par Robert Boach GmbH.

D. Adjustment Test for Manifold Pressure Compensator

īestatn =

1 375

rev/min decreasing pressure - in bar gauge pressure

MB 5,7 x 1

-2-

Testoil-ISO 4113

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 ARS2293	0,7		11,3 - 11,4
withAB 1138 L		0	10,9 - 11,0
		0,28	11,1 - 11,2
		-	

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 5.7 v 6. Edition

PES 6 A 90 D 410 RS 2596

ROV 300-1400 AB 1066 DL

supersedes 10.80

company: Daimler-Benz OM 352 A engine.

124 kW (168 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
2,0-2,1
Part closing at prestroke
(1,95-2,15)
mm

		(1,95-2,15)			والمراجع والمنافي والمراجع والم والمراجع والمراجع والمراجع والمراجع والمراجع والمراجع والمراج	
Rotational speed ray/min	ceed Control rod travel Fuel delivery		Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,4+0,1	7,7-7,8	0,3(0,45)		4	
300 500 500	8,9-9,1 3,6+0,1 2,3+0,1		0,2(0,4) 0,4(0,55) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated s	peed		Intermediat	e rated sp	eed	Lower rated	speed	4	Sliding s	leeve travel
Degree of deflection of control	rev/min Control	Control rod (travel	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
iever	rod travel	rev/min (2	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1400 1750	15,2-17,8 0 - 1,0		-	-	ca.19	100 300	min.10,5 8,9-9,1	630	0,7-0,9 3,8-3,9
ca.63		1440-1450 1580-1610				590-660 ③a			1020 1400	5,3-5,5 7,7

Torque controi travei a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min cm²/1000 strokes		Rotational-speed (2b) imitation intermediate speed rev/min	(30)		idie switchin	fuel delivery 6	Torque- travel	Control control room
1	2	3	4	5	6	7	8	9
LDA 1400	0,7 bar 77,0-78,0 (75,0-80,0)	1440-1450*	LDA 500 LDA 500	0,7 bar 70,5-72,5 (68,5-74,5) 0 bar 56,0-58,0 (54,0-60,0)		72,25-82,25 bei RW = 15,8-16,2mm stop at 3-3,5 travel	1200 1000	12.4+0,1 12,5+0,3 13,1+0,2 ontrol

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Testatn =

รถก

rev/min decreasing pressure - in bar gauge pressure

MB 5,7 V

-2-

Testoil-ISO 4113

Pump/governor	Sétting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 2596 with	0,7		13,6 - 13,7
AB 1055 UL		0,35	13,2 - 13,3
	,	0,2	12,5 - 12,7
	·	0	12,3 - 12,4

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Festoil-ISO 4113

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 5,7 v 2 5. Edition

En.

supersedes

5.81

PES 6 A 90 D 410 RS 2596

RQV 300-1400 AB 1066-1 DL

company:

Daimler-Benz OM 352 A 126 kW (171 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1.95-2.15

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm &
1400	12,4+0,1	7,8-7,9	0,3(0,45)			
300	8,9-9,1	0,9-1,5	0,2(0,4)			
500	13,6+0,1	C. Sp. 4 - 5	0,4(0,55)			
500 。	12,3+0,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated s	1	Control rad)				Lower rated	speed	Sliding sleeve travel		
deflection	rev/min Control rod travel mm 2	travel	(1) (2)	deflection of control	rev/min	travel	deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min 10	(1) mm 11
max.	1750	15,2-17, 0 - 1		-	-	-	ca.19	100 300	min.10,5 8,9-9,1		1,2 2,5-2,7 8,6
ca.62		1440-145 1580-161					590 <i>-</i> 660				

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-red Test oil ten		Rotational-speed 2b limitation intermediate spead	Fuel delivingh idle s	rery characteristics (5e) peed (5b)	Starting Idle switchin)	Torque- travel	control 5
rev/min	cm ³ /1000 strokes .	rev/min 49	rev/min 4	cm ³ /1000 strokes	rev/min	cm³/1000 strokes	rev/min 8	travel mm
LDA 1400	0,7 bar 78,0-79,0 (76,0-81,0)	1440-1450*	LDA 500 LDA 500	0,7 bar 72,5-74,5 (70,5-76,5) 0 bar 58,0-60,0 (56,0-62,0)	100	72,25-82,25 15,8-16,2 RW 220 (80-240)	1400 1200 1000 500	12,5

Chucking values in prackets

* 1 mm less control rod travel than col. 2



D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

MB 5,7 v 2

-2-

Testoil-ISO 4113

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6ARS 2596 withAB1066-1 DL	0,7	0 0,35 0,2	13,6 - 13,7 12,3 - 12,4 13,2 - 13,3 12,5 - 12,7
		-	

Notes

(1) when n ≈

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 MB 5,7 v 8 2. Edition

supersedes

company:

4.81 Daimler-Benz

engine: OM 352 A

124 kW (169 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

PES 6 A 90 D 410 RS 2596

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm	Fuel delivery cm³/100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,5+0,1	7,7-7,8	0,3(0,45)			
300 600 450	7,9-8,1 11,5+0,1 10,2+0,1	*	0,2(0,4) 0,4(0,55) 0,4(0,55)			

RQV 300-1400 AB 1151 L

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

Upper rated	peed			Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 3	(a) (2s)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	mm 11
max.		15,2-17 0 - 1	,8 ,0	-	-	-	ca.24	100 300	min.9,5 7,9-8,1	250 600 950	0,9-1,1 3,1-3,4 5,2-5,5
ca. 61		1440-14 1560-15					350-500 3a			1400	8,2

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-spued (2b) imitation intermediate speed	high idle ageed (ch)		Starting fuel delivery (8) idle switching point		Torque- travel	Control rod
rev/min	cm ³ /1000 strokes	rev/min 40	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 1400	0,7 bar 77,0-78,0 (75,0-80,0)	1440-1450*	LDA 600 LDA 450	0,7 bar 63,0-65,0 (61,0-67,0) 0 bar 42,0-44,0 (40,0-46,0)	100	- 72,25-82,25 at 14,8 - 15,2 mm RW	-	-

Checking values in brackets

° 1 mm less control rod travel than col. 2

ISO 4113

rev/min decreasing pressure - in bar gauge pressure

MB 5,7 v 8

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 ARS 2596 withAB 1151 L	0,7		11,5 - 11,6
		0	10,2 - 10,3
		0,29	11,1 - 11,2
		0,18	10,6 - 10,8

Notes

(1) when n =

Test at n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 MB 5,7 q 2

6. Edition

PES 6 A 90 D 410 RS 2293

EP/RSV 350-1300 A0B7& DL EP/RSV 350-1400 A0B788DL supersedes 11.79

Dimension H = 22,5 mm

Daimler-Benz OM 352 (A) (150 PS - 1) (168 PS - 2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,15-2,25 Part closing at prestroke(2,10-2,30)

mm (from BDC)

Control rod Fuel delivery Rotational Difference Control rod Fuel delivery Spring pre-tensioning speed travel (torque-control valve) cm3/ cm3/100 strokes rev/min mm 100 strokes mm cm\$100 strokes 0,3(0,45)n = 14001300 11,0+0,1 7,0-7,1 11,3+0,1 7,5-7,7 0,2(0,4)6,9-7,1 0.7 - 1.10.7 - 1.1350 6,7-6,9 800/500 C 4-5 0,4(0,55)

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

783 DL (1)

1 Uppe	Upper rated speed rev/min		Intermediate rated speed			Lower rated speed Control			3 Torque control		
deflection of control lever	travel mm	travel mm rev/min				lever deflection in degrees	rev/min	travel mm	rev/min	travel mm	
1	2	3	4	5	6	7	8	9	10	11	
ca.59		11,6-11,1			ca.23	350	7,0	1300	+0,1		
			without auxiliary spring						1000	11,0 11,2	
28		a.11,0 1,3-1,7	with auxiliary spring			350 410-470 550	6,9-7,1 = 2,0 0 - 1	500	11,6		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	uil-load stop	Rotational- speed limitat	39 F4	uel delivery naracteristics	Starting t	uel delivery 5	(4a) Idi	e stop
rev/min	emp. 40°C (104°F) cm ⁹ /1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm\$1000 strokes 5	rev/min	cm ² /1000 strokes 7	rev/min 8	Control roc travel mm 9
LDA 1300	0,7 bar 70,0-71,0 (68,0-73,0)		LDA 800 LDA 500	0,7 bar 65,5-68,5 (63,5-70,5) 0 bar 54,0-56,0 (52,0-58,0)	106	13,7-14,3		0,5-1,(e stop

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

Geschaftsbereich KH Kundendienst Kfz-Ausrüstung

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estoil-ISO 4113

B. Governor Settings

	Upper rated speed revision		Intermediate rated speed			0	Lower	Lower rated speed		rque control
Degree of deflection of control	travel mm	travel mm rev/min				Control- lever deflection	rev/min	travel	rev/min	travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
67-70	1400	11,3-11,4				19-21	350	6,8		+ 0,1
	1440- 1475-	1450=10,3 1505= 4,0	without auxiliar spring			Y	4	mind.19	1400	11,3
		ca. 10.3		auxili	a rv		350 540-600	6,7-6,9 = 2,0	650 500	11,3 11,5
29	1600	0,3-1,7	sprin		ary		700	0 - 1		

C. Settings for Fuel Injection Pump with Fitted Governor

Est oil temp. 40°C (104°F)		Rotational- speed limitat.	3a Fu	Fuel delivery characteristics		Starting fuel delivery 5		e stop
rev/min 1	cm ³ /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7		travel mm 9
LDA 1400	0,7 bar 74,0 - 75,0 (72,0 - 77,0)	1440-1450*	LDA 500	0,7 bar 62,0 - 64,0 (60,0 - 66,0)		13,7-14,3 mm RW		0,5-1,0
			LDA 500	0 bar 54,0 - 56,0 (52,0 - 58,0)			befa	re stop

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	diminution Control rod travel- difference mm (1)
2293 with 783 DL	0,39	0,29	0,1 - 0,2 0,5 - 0,7
2293 with 788 DL	0	0,285 0,500	10,8 - 10,9 11,1 - 11,2 11,5 - 11,6
Switching point (hydr. measurement	0,40 - 0,50)	0,15 - 0,25	10 - 12 mm RW 19 - 21 mm RW

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

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Test Specifications Fuel Injection Pumps (A) and Governors

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WPP 001/4 EIC 3,9 b
4. Edition

En

PES 4 A 80 D 420 RS 1277 EP/RSV 300-1050 A 1 B 2052 DR

supersedes 4.79 company Eicher

1 - 2 - 4 - 3 je $90^{\circ} \pm 0,50$ ($\pm 0,75$)

engine EDK 4 T, EDK 4-12 63 kW (85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25 (2,10-2,30)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference cm³/ 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning storque-control valve)
1	2	3	4	2	3	6
1030	11.0	6,7 - 6,8	0,2(0,35)			
300 750/500	+ 0,1 7,9-8,1 	1,7 - 2,3 C, Sp. 4-5	0,2(0,3) 0,3(0,4)			3

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

	r rated speed Control rod fravel mm		intermed	liate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control Control rod travel mm 11 + 0,1
loose	800 X =	0,3-1,0 4,5				ca.24	300 100 300	7,5 min.19 7,9-8,1	1030 `810	11,0 11,9
ca. 55	10,0 4,0 1300	1070-1080 1095-1125 0,3 - 1,7					515-575 650	= 2,0 0 - 1	500	12,8

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(J)	II-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting Idle	Starting fuel delivery 5		e stop
Test oil to rev/min 1	cm ³ /1000 strokes	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	Control root travel mm 9
LDA 1030	0,8 bar 67,5-68,5 (66,0-70,0)	1070-1080*	DA 750	0,8 bar 84,5-87,5 (83,0-89,0)	00	99,5-109,5	300	8,0
			DA 500	0 bar 55,5-57,5 (54,0-59,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min increasing pressure - in bar gauge pressure

EIC 3,9 b

-2-

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iğ.
Tes

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
1277 with 2052 D	0,80		12,7 - 12,8
		0,50	12,1 - 12,2
		0,23	11,3,- 11,5
		0	10,7 - 10,8

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 5,1 g 1

1. Edition

Ēη

PES 6 A 85 D 410/3 RS 2611

RSV 325-1200 AOB 2148L

supersed€s

KHD

company engine

F 6 L 913

tractor DX 120 84 kW (114 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,5-2,6 (2,45-2,65)

mm (frem BDC)

	speed	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
າ ກ	1200	11,3+0,1	6,9 - 7,0	0,3(0,45)			
+	325 800	8,4-8,6 12,0+0,1	0,9 - 1,5 C,Sp.4 u. 5	0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

	r rated speed Control rod travel mm		Intermed	late rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rud travel mm	3 To	rque control Control rod travel mm	
loose	800	0,3-1,0	-	-	-	ca.30	325	8,5	1200	11,3-11,4	
	x =	4,0						min.19,0		11,6-11,9	
ca.56	10,3	1240-1250 1305-1335					325 490-550	8,4-8,6 =2,0**	500	12,0-12,1	
28	1425	0,3 - 1,7		t idle	-spee	dauxili	ary spri	ng at 2 r	m con	rol-rod tr	avel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

l-load stop	Rotational- speed limitat			Starting f	uel delivery 5	4a Idle stop		
oil temp. 40°C (104°F) nin cm³/1000 strokes 2 Note changed to) rev/min 3			cm ² /1000 strokes 5	rev/min	cm ² /1000 strokes 7	rev/min	Control root travel mm	
69,5-70,5 (67,5-72,5)	1240-1250*	800	63,5-65,5 (61,5-67,5)	100	19,0-21,0	325	8,5	
ſ	np. 40°C (104°F) cm²/1000 strokes 2 69,5-70,5	speed limitat Note changed to) rev/min 3 1240-1250*	speed limitat Note Changed to rev/min 3	speed limitat Characteristics Note Changed to rev/min 3 69,5-70,5 1240-1250* 800 63,5-65,5	speed limital Characteristics (die	np. 40°C (104°F) cm²/1000 strokes 2 Note changed to) rev/min cm²/1000 strokes 5 100 19,0-21,0	np. 40°C (104°F) cm³/1000 strokes 2 Note changed to) rev/min cm³/1000 strokes rev/min cm³/1000 strokes rev/min 6 7 1240-1250* 800 63,5-65,5 100 19,0-21,0 325	

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

Geschaftsbereich KH. Kundengienst. Kfz-Ausrustung.

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WPP 001/4 MB 2,4 d 4. Edition

En

PES 4 M 55 C 320 RS 60

EP/MN 60 M 46 DR (1) EP/MN 60 M 42 DR (2) EP/MN 60 M 51 DR (3) EP/MN 60 M 43 DR (4) supersedes company

11.76 Daimler-Benz

(2/4-Transporter)

engine

OM 616 (1/3-Pkw)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80 mm (from BDC)

(1.65-1.85)

Rotational speed	Control rod travel	Fuel delivery	Difference cm ³ / 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
1	2	3	4	5	6	7
2250	13,7	3,9-4,1	0,2(0,25)			
	(+0,1)					7
250	9,0-9,2	0,4-1,0	0,15(0,2)			
1600/1000	Sect. C	col. 4-6	0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

	Leakage		Control- limitatio breakay				Auxiliary spring auxiliary cam**		Torque control	
Torque control travel		Time at least		Control rod travel	Vacuum	Control rod travel	Vacuum	Control rod travel		Control rod travel
mm .	mm water col.	s	mmw c.	mm	mm w.c	mm	mm w.c	mra	mmw.c.	mm
1	2	3	4	5	6	7	8	9	10	11
1,1+0,1	500-480	10	520	13,7		9,2-13,7 6,2-10,7		9,2-10,2 7,7- 8,7	250	14,8-14,9 14,4-14,8
nontral rad tra:	eltect (cols 4-	.111	550-	580*	675	3,2-7,2				13,9-14,3 13,7-13,8
= rotational sp adjust breaker	ontrol rod travel test (cols. 4–11) rotational speed 500 rev/min. djust breakaway (cols. 4–5) by means of shims* am adjustment (8 8–9 – C 7-8) by means of shims**									

C. Settings for Fuel Injection Pump with Fitted Governor

	stop screw mp 40°C (104°	F)	Fuel deliv	very character	stics	idle (stop idle (imb		Control road travel from full-load to lidle	
rev/min 1	Vacuum mm wat col	cm ³ /1 000 strokes 3	rev/min Vacuum cm³/1000 stroke 4 5 6		cm ³ /1000 strokes 6	rev/min Mm wat col 7		mm cm ³ /1000 strokes 8	
2250	520	(38,7-41,7) (37,9-41,5)		(37,9-41,5)	500	600	3,2- 4,2		
			1000	140	38,2-39,7 (37,2-40,7)	250	ca.880	4,5-10,5	

Checking values in brackets

8.77
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BOSCH

Notes:

- 1. Sliding-sleeve idle travel = 6.75 + 0.25 mm
- 2. Advance angle in idle full load range = 34 42°
- 3. ** 3 At this engine speed, exceed control-rod travel by 0.4+0.1 mm; idle delivery must not be affected!
- 4. ***- "12.4 mm" is the full-load control-rod travel set in Section A, 1-3.

Testoil-ISO 4113

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 b
4. Edition

En

PES 4 M 55 C 320 RS 58

EP/MN 60 M 41 DR

supersedes

10.75

company

Daimler-Benz

engine

OM 616 - USA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80 (1,65-1,85)

mm (from BDC)

at max. RW

Rotational speed rev/min 1 2250	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3 3,8-4,0	Difference cm³/ 100 strokes 4 0,2(0,25)	Control rod travel mm 5	Fuel delivery cm ³ /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
250 1600/1000	(+0,1) 9,1 (±0,1) Sect. C	0,4-1,0	0,15(0,2) 0,25(0,3)			:

Adjust the fuel delivery from each outlet according to the values in [______

B. Governor Settings

	Leakage		Control-rod travel limitation breakaway*				Auxiliary spring auxiliary cam**		Torque control	
Torque control travel		Time at least		Control rod travel	1	Control rod travel	Vacuum	Control rod travel		Control rod travel
mm	mm water col.	s	mmw.c.	mm	mm w.c.	mm	mmwc	mm	mm w.c.	mm
1	2	3	4	5	6	7	8	9	10	11
0,8+0,1	500-480	10	520 550 -	13,5 - 580*	580 675	9,0-13,5 3,2- 6,8		8,9-10,0 7,5- 8,6	150 300 375	14,2-14,3 14,0-14,3 13,6-13,9
adjust breakey	ret test (cols. 4- eed 500 rev/mir vay (cols. 4-5) i nt (8 8-9 - C 7-							520	13,5-13,6	

C. Settings for Fuel Injection Pump with Fitted Governor

	vacuum mm wat col	F) cm ³ /1000 strakes 3	Fuel deliv rev/min 4	Vacuum mm wat. col	cm ³ /1000 strokes	edle (stop idle (imb rev/min 7		Control road travel from full-load to idle mm cm ³ /1000 strokes 8
2250	2250 520 38,7-39,7 (37,7-40,7)			370	38,2-39,7 (37,2-40,7)	500	600	3,2- 4,2
				150	37,7-39,7 (36,7-40,7)	250	ca.620	4,5-10,5

Checking values in brackets

BOSCH

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 MB 2,4 e 2. Edition

PES 4 M 55 C 320 RS 60

EP/MN 60 M 47 D

supersedes

company

12.75 Daimler-Benz OM 616

engine

(Schweden)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80 mm (from BDC)

(1,65-1,85)

Rotational speed	travel	Fuel delivery	Difference cm ³ / 100 strokes	Control rod travel	Fuel delivery cm ¹ /100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3	4	5	6	7
2250	13,4(+7,1)	3,8-4,0	0,2(0,25)			
250	9,1(±0,1)	0,4-1,0	ù,15(0,2)			
1600/1000	Sect. C	col. 4-6	0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [_____

B. Governor Settings

	Leakage		Control-rod travel limitation breakaway*				Auxiliary spring auxiliary came*		Torque control	
Torque control travel	Vacuum pressure drop			Control rod travel		Control rod travel		Control rod travel		Control rod travel
mm	mm water col.	s	mmw.c.	mm	mm w.c.	mm	mmwc	mm	mm w.c.	mm
1	2	3	4	5	6	7	8	9	10	11
1,1+0,1	500-480	10	520	13,4	615	8,5-13,5 5,8-10,5 2,7- 6,8	675 850	9,2-10,0 7,5- 8,6	250	14,5-14,7 14,2-14,6 13,7-14,1
control rod travel test (cols. 4-11) = rotational speed 500 rev/min. adjust breakaway (cols. 4-5) by means of shims* cam adjustment (B 8-9 - C 7-8) by means of shims**					0/3	k,/- 0,0			520	13,4-13,5

C. Settings for Fuel Injection Pump with Fitted Governor

	stop screw mp 40°C (104°	F)	Fuel deliv	ery character	stics	idle (stop idle (imb		Control road travel from full-load to idle
rev/min	Vacuum mm wat col	cm ³ /1 000 strokes	rev/m=n	Vacuum mm wat col	cm³/1000 strokes	rev/min 7	Vacuum mm wat col	mm cm³/1000 strokes 8
2250	520	38,7-39,7 (37,7-40,7)	1600	360	37,9-39,5 (36,9-40,5)	500	600	3,2- 4,2
	(3/3/ 103/)		1000	140	37,2-38,7 (36,2-39,7)	250	ca.850	4,5-10,5

Checking values in brackets

2.76 Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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